THE CEYLON MEDICAL JOURNAL

Established 1887

Volume 40, No. 3, September, 1995

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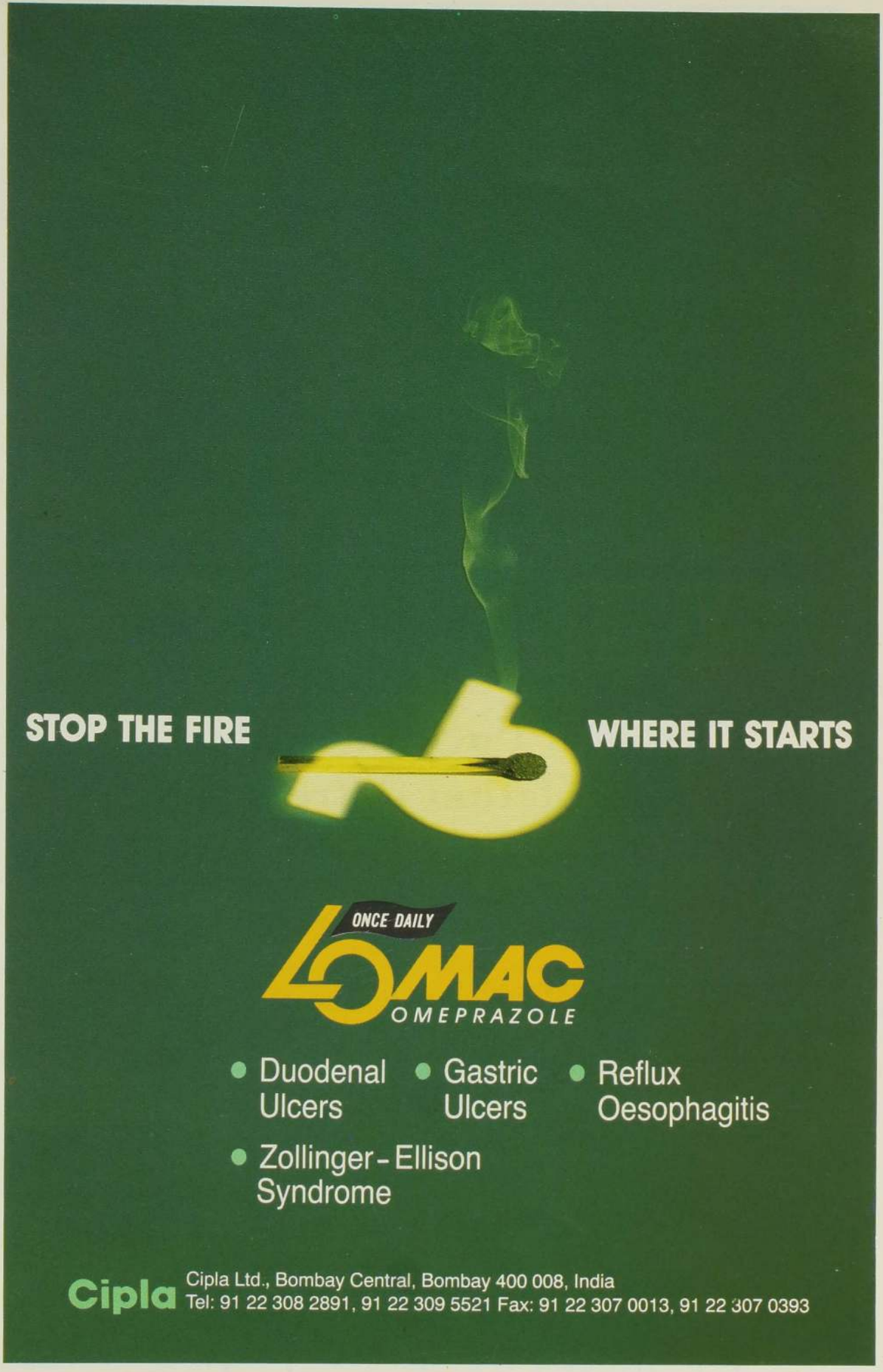

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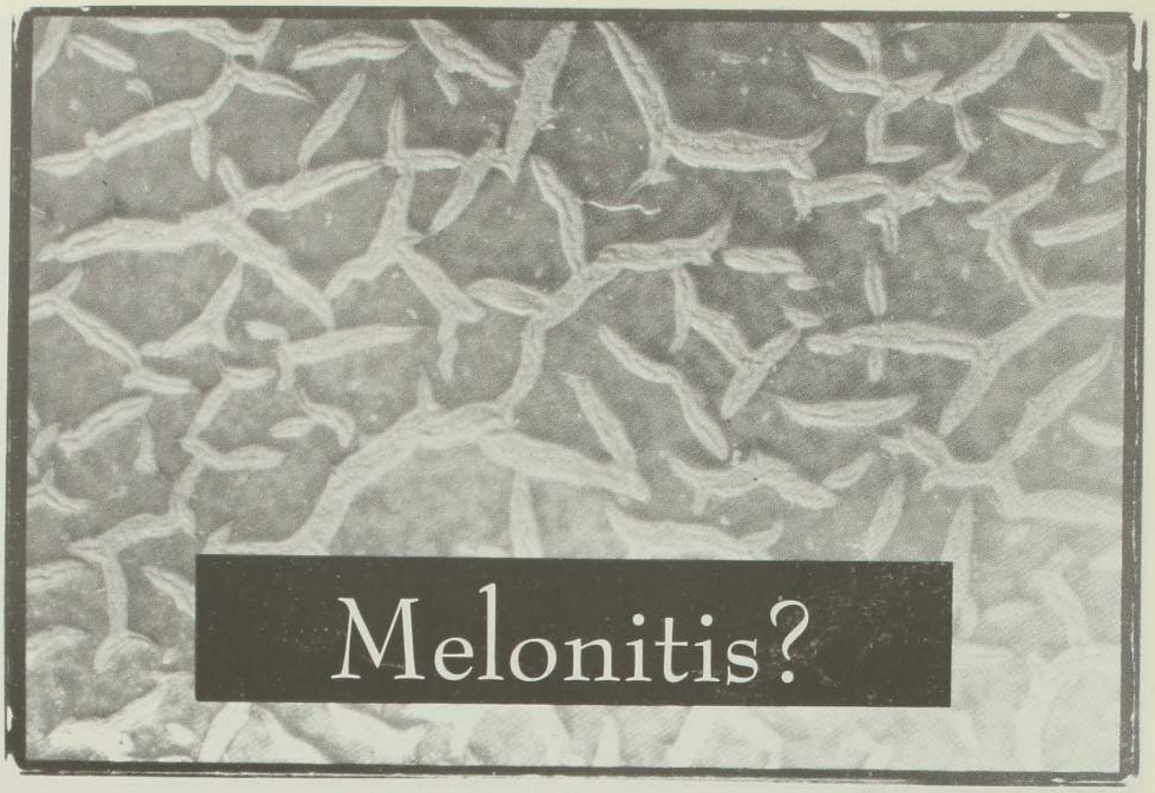

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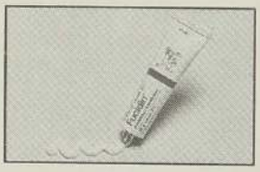

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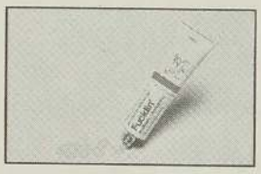

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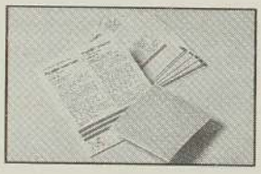

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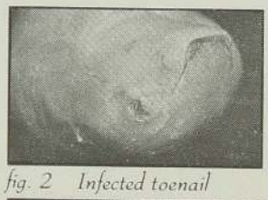

fig. 2 Infected toenail

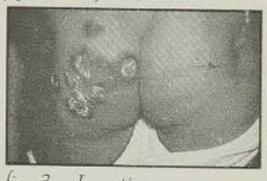

fig. 3 Impetigo

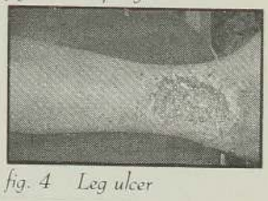

fig. 4 Leg ulcer

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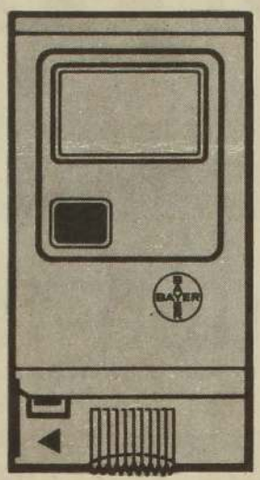

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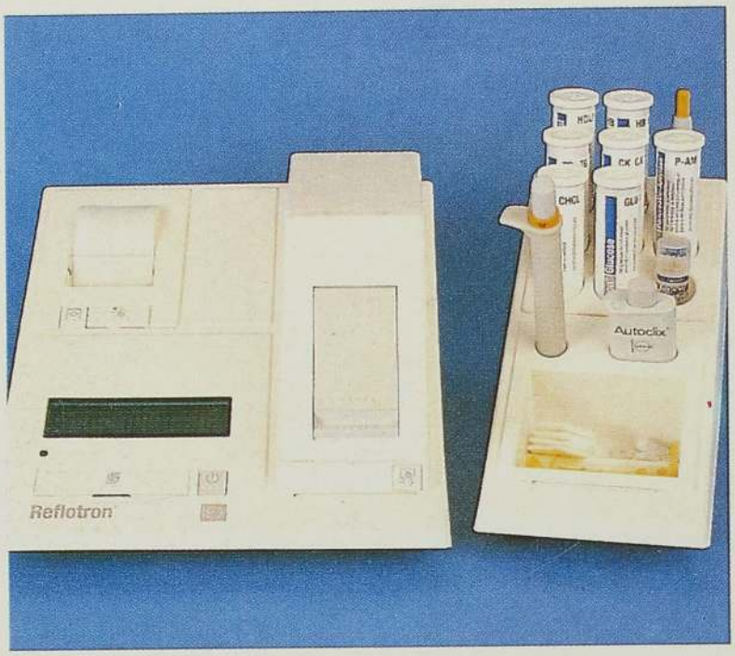

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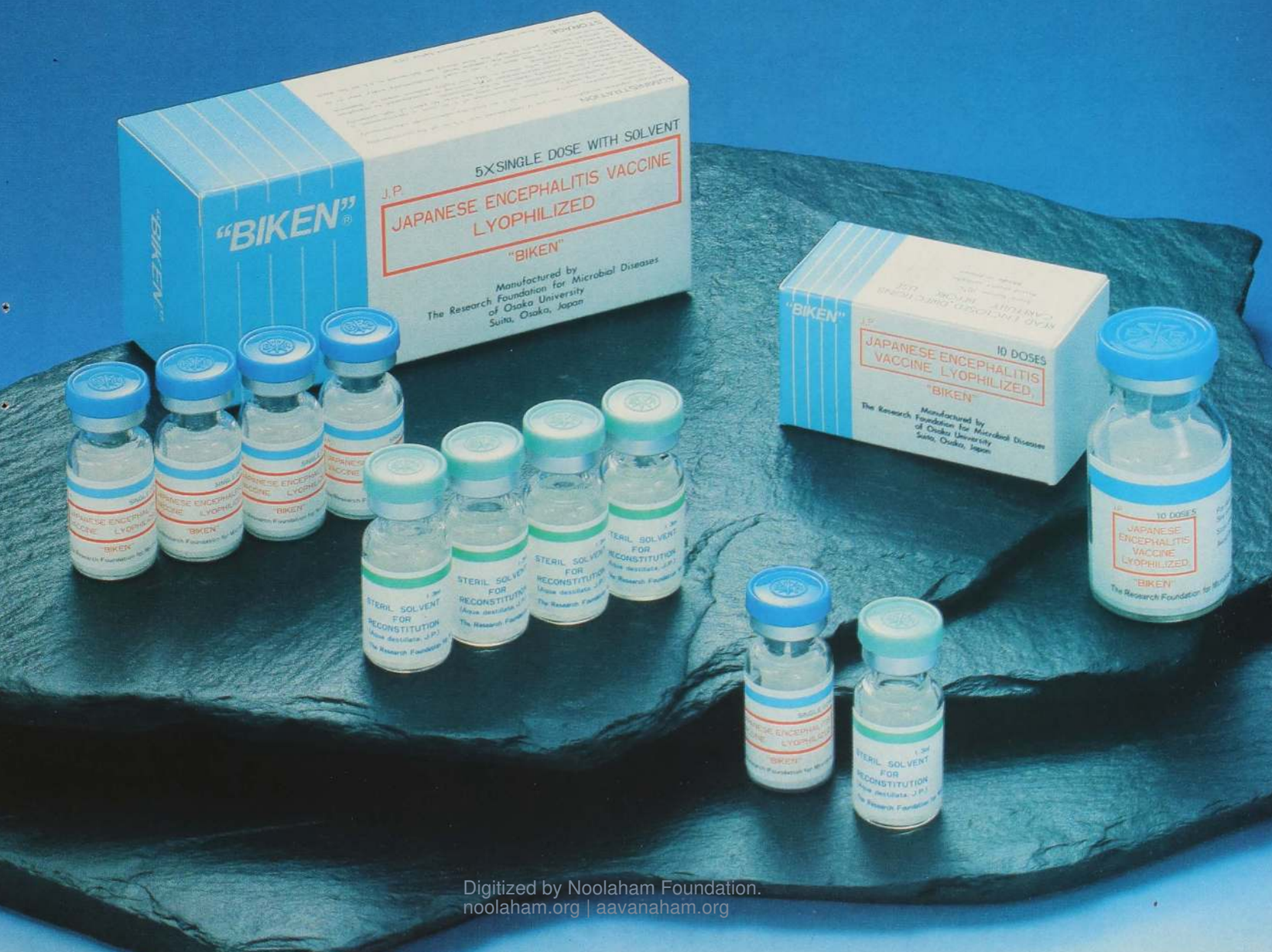

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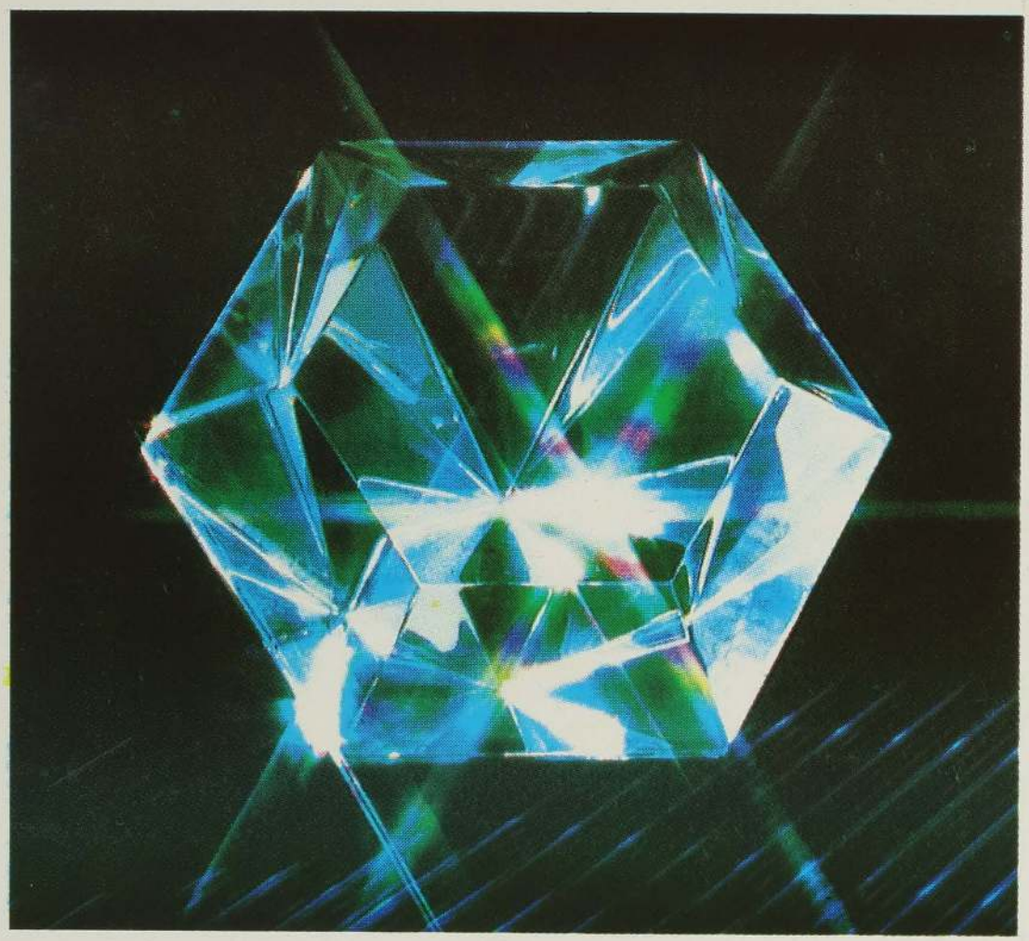

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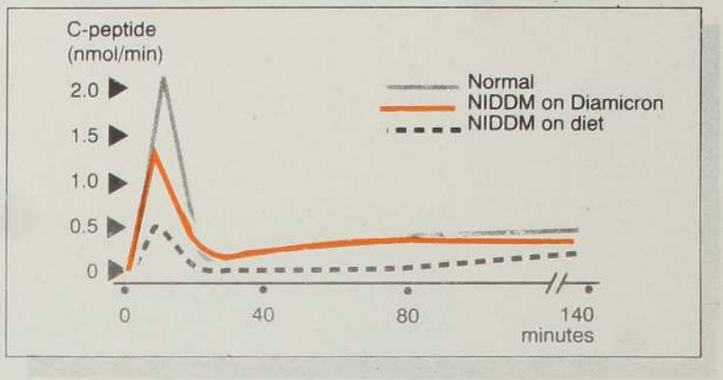

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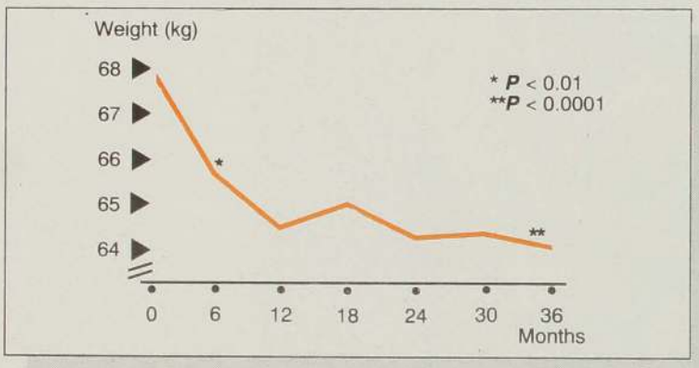
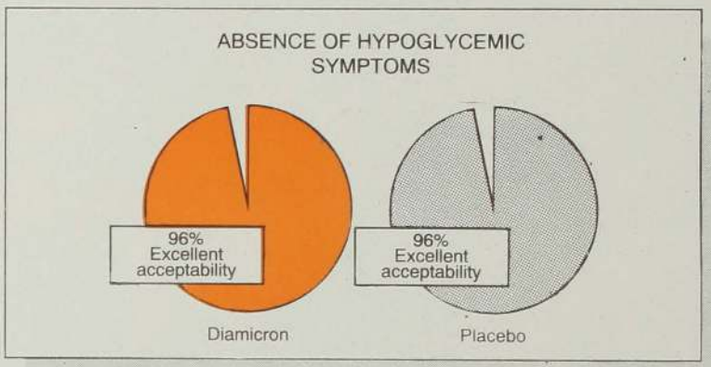


...and whatever their age



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1. Matthews D et al. *IDF Bull*. 1987 ; 32(1) : 12-15
2. Bak JF et al. *Diabetes*. 1989 ; 38 : 1343-1350
3. Zurro Hernandez J et al. *Curr Med Res Opin*. 1986 ; 10 : 351-358
4. Martin BJ, Kesson CM. *Pract Diabetes*. 1986 ; 3(3) : 146-148
5. Jennings AM et al. *Diabetes Care*. 1989 ; 12(3) : 203-208
6. Guillausseau PJ. *Am J Med*. 1991 ; 90(6A) : 46S-49S
7. Harrower ADB et al. *Diabetes Res*. 1990 ; 13 : 19-21

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Refer to data sheet for complete prescribing information.

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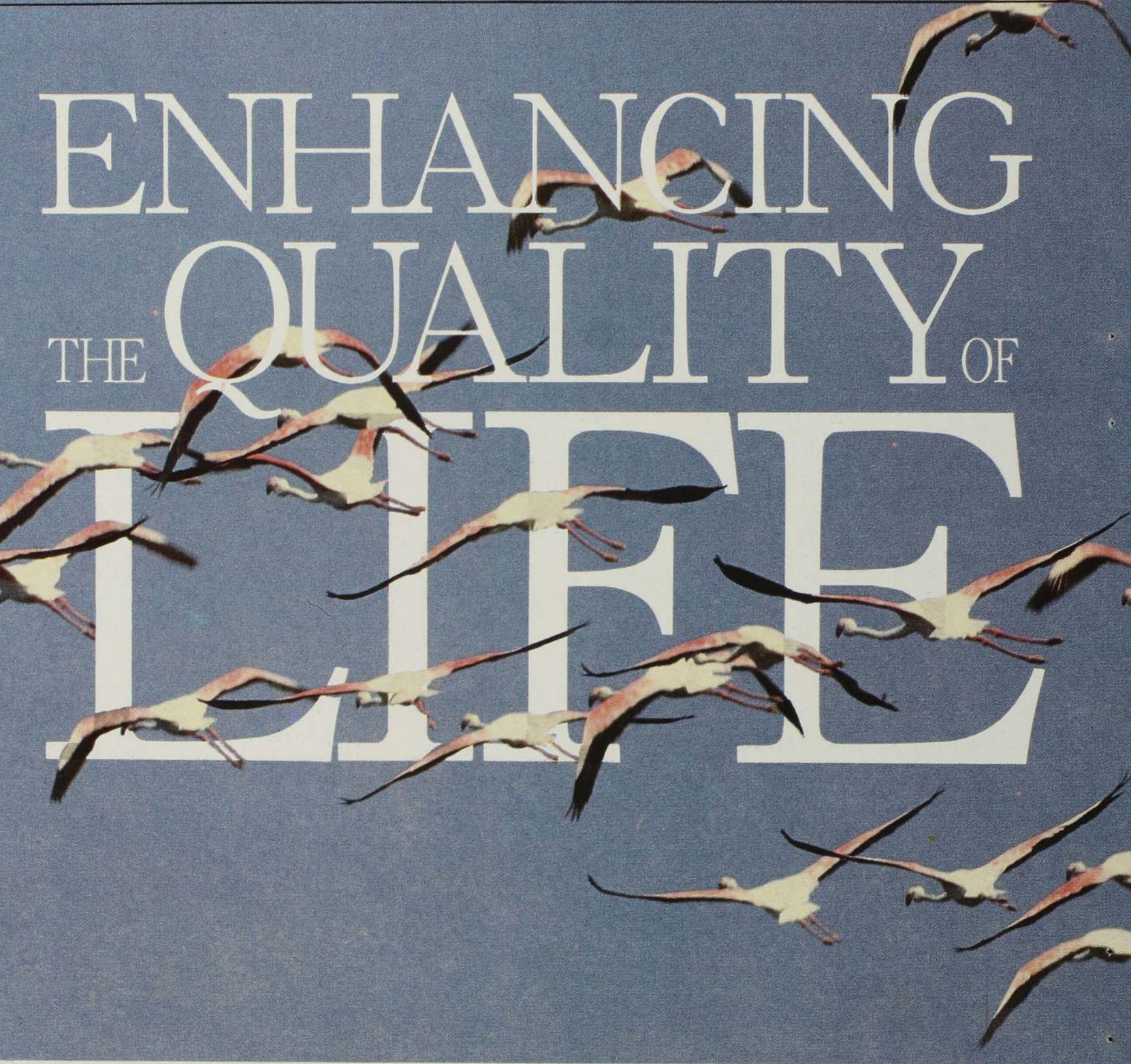

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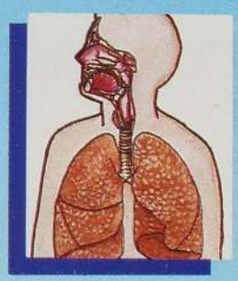

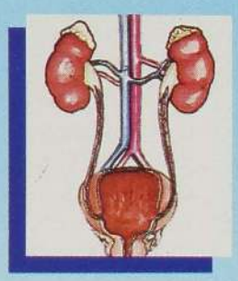

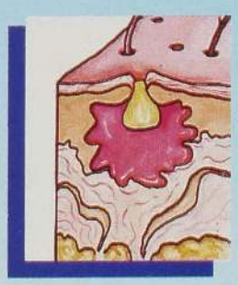

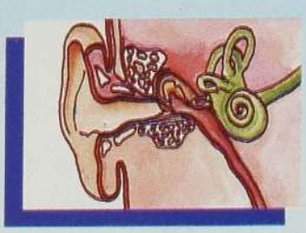

PRESCRIBING INFORMATION

INDICATIONS: *Bronchitis: acute and chronic, including prophylaxis of acute exacerbation. Bronchopneumonia and atypical pneumonia caused by Mycoplasma pneumoniae. Infected bronchiectasis. Otitis media. Urinary tract infections and non-gonococcal-urethritis, Bacterial infections of the gastrointestinal and biliary tract. Soft tissue infections, peritonitis, post partum infections (endometritis), meningitis and endo-carditis caused by anaerobic strepto-cocci or Rickettsiae. Gonorrhoea and Syphilis. (when Penicillin is unsuitable). Granuloma inguinale and chancroid. Brucellosis. Typhus and Q. Fever, Psittacosis and lymphogranulomavenereum. Conjunctivitis (Combination with a topical agent).* ***CONTRA INDICATIONS:*** *The drug is contra-indicated in persons who have shown hypersensitivity to any of the Tetracyclines.* ***WARNING:*** *The use of drugs of Tetracycline class during tooth development and last half of the pregnancy may cause permanent discolouration of tooth.* ***DOSAGE AND ADMINISTRATION Adults:*** *The usual dose of DOXYN Capsule is 200 mg on the first day of treatment (administration 100 mg every 12 hours), followed by 100 mg per day. In management of more severe infections (particularly chronic infections of urinary tract) 100 mg every 12 hours is recommended for 7 - 10 days. Concurrent use of antacids with DOXYIN is not recommended.* ***SIDE EFFECTS:*** *Rarely occur and are generally gastrointestinal, anorexia, nausea, vomiting, glossitis and diarrhoea, etc.* ***COMPOSITION*** *Each capsule contains: Doxycycline hyclate/HCl BP. USP. equivalent to 100 mg. Doxycycline* ***PRESENTATION:*** *Box containing 50 capsules in blister of 10 capsules.*

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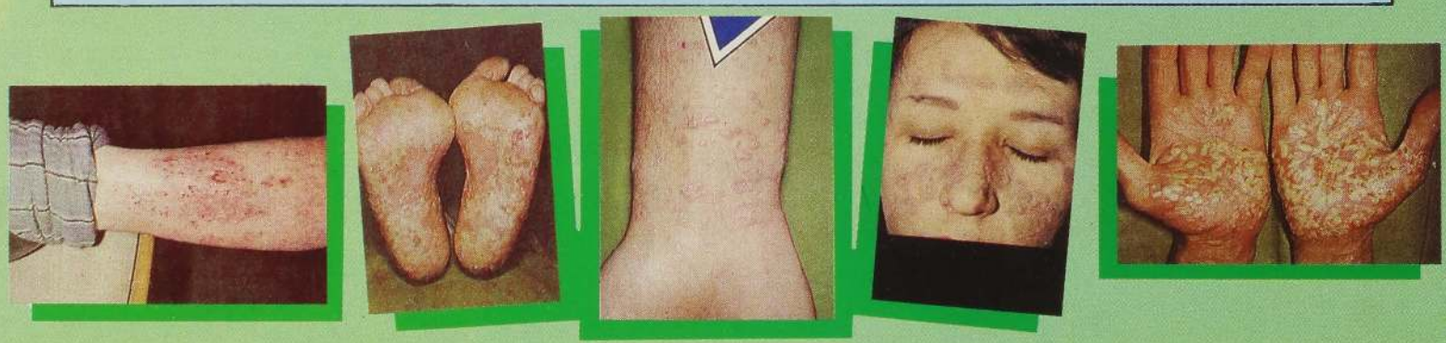

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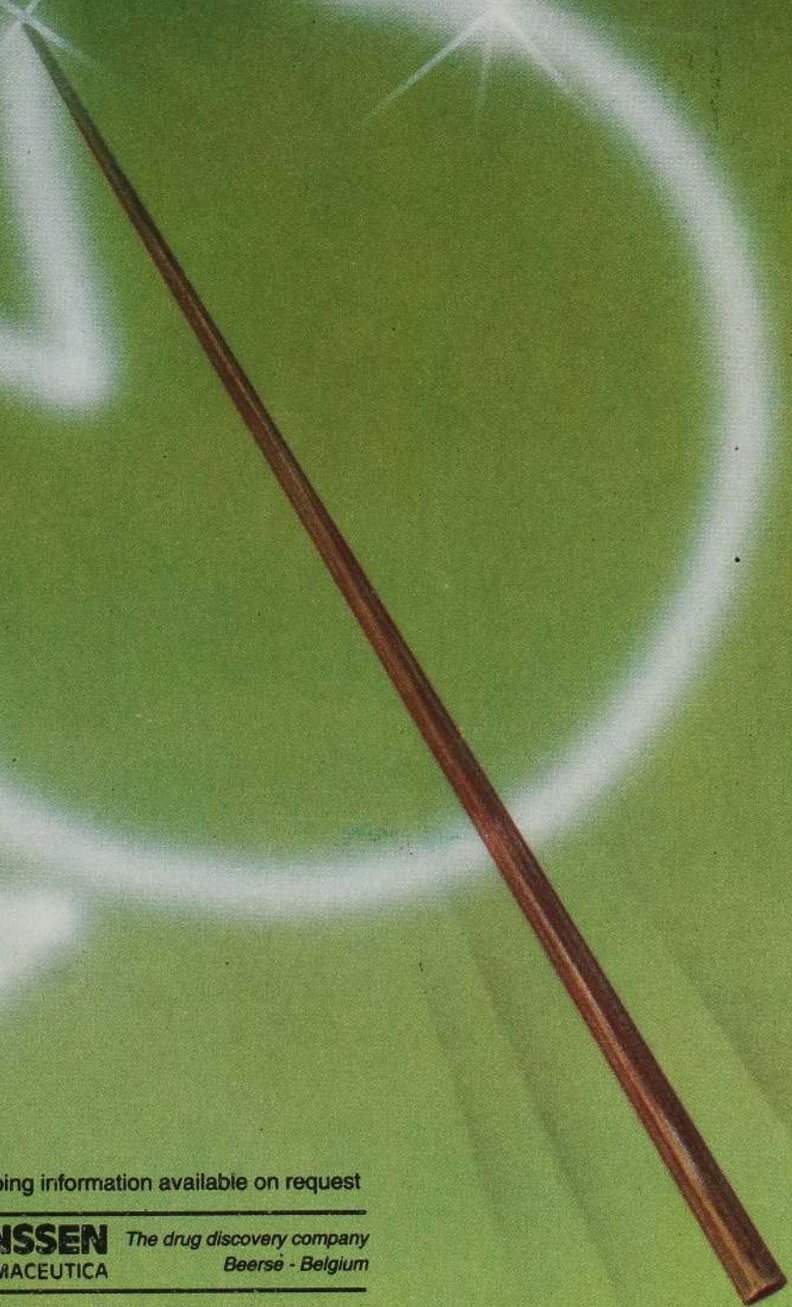

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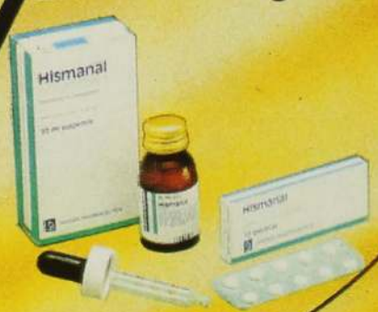

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THE CEYLON MEDICAL JOURNAL

Established 1887

Volume 40, No. 3, September, 1995

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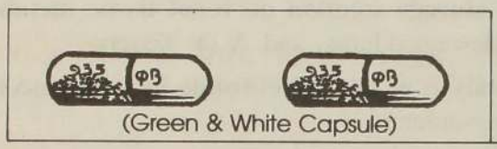

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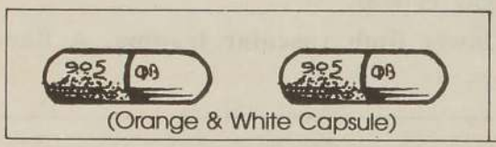

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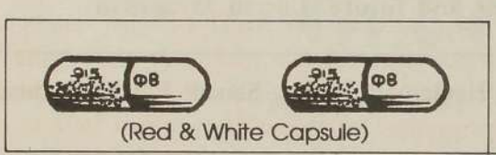

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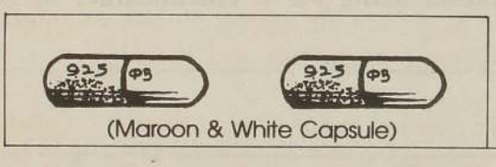

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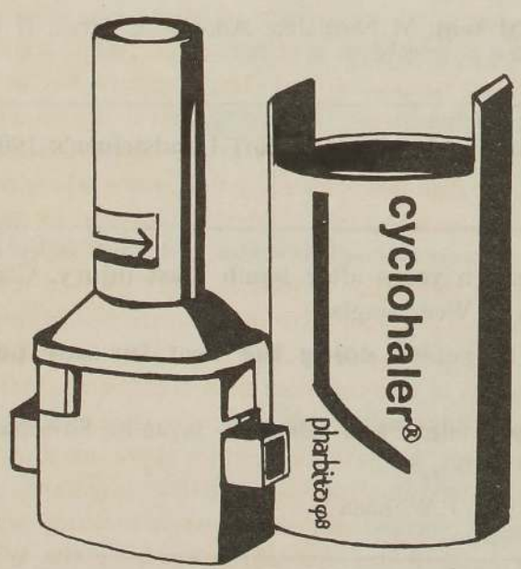

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THE CEYLON MEDICAL JOURNAL

Established 1887

The Official Publication of the Sri Lanka Medical Association

Volume 40, No. 3, September, 1995

Quarterly ISSN 0009-0875

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Leading article

The GATT TRIPS agreement and health care in India

Ceylon Medical Journal, 1995; **40** : 91-93

The GATT agreement on the trade related aspects of intellectual property rights (the TRIPS Agreement), which will form part of the future World Trade Organization (WTO), will put on India an obligation to provide patent protection for pharmaceutical products(1). Much of what has been said about the implications of this commitment for health care in India, particularly regarding pharmaceutical prices, has been alarmist and has created needless anxiety. A dispassionate examination of the facts will, I believe, indicate that any effect on prices will be very gradual and need not be more than modest and, in any event, should be seen in the context of policies aimed at the better availability of drugs to treat diseases prevalent in India.

Why should any effect on prices need be no more than modest? The first point is that no drugs already on the market in India will be affected by TRIPS obligations on patents and exclusive marketing rights. The same goes for drugs presently under development and for which patent applications in other countries have already been published. The length of this development period, the time it takes between the filing of a patent application and the introduction of that drug on the market, was in the late 1980s estimated to be an average of 11-12 years in the industrialised countries where new chemical entities are concerned, and somewhat shorter, 8-10 years, for leading new drugs(2-4). This period has been longer in India. Indeed, a study of the 500 leading pharmaceuticals on the Indian market in 1993 showed that, if India had in force all along a TRIPS patent term of 20 years from filing, none of these drugs that would have been under patent protection on that date would have had an outstanding patent term of more than eight years.(5) This means that virtually all the new drugs using new chemical entities that will come onto the market in India over the next 10 years or more are those presently under development and will be unaffected by TRIPS obligations on patents. Moreover, the build up of patented drugs from then onwards will be very gradual and it will not be until the year 2015 (assuming the WTO comes into force in 1995) that India has a full roster of patented drugs comparable with that in countries that provide product patent protection today.

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Wijerama House,
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Colombo 7
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Printed by

Mahendra Senanayake
Sridevi Printers (Pvt) Ltd.,
No. 27, Pepiliyana Road
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It might be said that this is all well and good, but what about the situation in 2015 when the full impact of patent protection will be experienced? What proportion of drugs on the market might be subject to patents at that time? This is something that is impossible to know since it will depend on the progress of research and development in the years ahead. However, as a guide based on the existing situation, it is interesting to note that only 24 active substances in the top 500 products on the Indian pharmacy market in June 1993 would have been protected by patents had India had a TRIPS level of patent protection for pharmaceuticals all along. These drugs represented 11% of the total sales of the top 500 products(5). Another analysis of the total market concluded that 31 drugs would have been patented on this basis accounting for about 8.4% of the total market(6). Therefore, even after full application of patent protection, it can be expected that the vast majority of drugs on the Indian market—as on other markets—will be in the public domain and not protected by patent. A further confirmation of this can be obtained from examining the World Health Organization's model list of essential drugs—some 250 drugs considered necessary for basic health care. In 1993 only 13 substances, of which only 4 were considered 'essential' without qualification or alternatives, would have been under protection in India if a TRIPS level of protection had been in place for many years.

What will be the effect on prices of those drugs which will be subject to patent protection? It will essentially depend on what kind of incentives the government wants to provide for research and development aimed at the creation of new drugs. The main reason for this is that the TRIPS agreement does not prevent countries from having price control regimes. Indeed this is a practice in many developed countries which have strong patent protection. Even in the countries of the European Union, which have virtually identical patent systems, the average prices of drugs, whether patented or not, varies by a factor of nearly 3:1, almost entirely because of different price control and related government policies (such as controls on reimbursement under social security systems)(7). It is mistaken to believe that patents necessarily give strong market power: many patented drugs are in competition with generic drugs or other patented drugs which are therapeutic substitutes. Another point that should be recalled is that, even where a patent does confer a degree of market power and even where the government allows the patent owner to charge the price that the market will bear, it would be in the interests of a company seeking to maximise its returns to charge a much lower price in a market like India, where average *per capita* income is relatively low, than in the markets of rich countries with high prices such as the USA or Switzerland—since increased volume would more than offset lower margins. It should also be appreciated that, under the TRIPS agreement, the rights granted to patent owners are not without qualification. The TRIPS agreement allows governments to grant a compulsory licence to another company subject to certain conditions, notably that the patent owner has refused to make available a voluntary licence on reasonable commercial terms within a reasonable period and that adequate remuneration is paid to the patent owner. Where the compulsory licence results from a finding that the patent owner has engaged in abusive anticompetitive practices, these requirements no longer need to be met.

The underlying social purpose of the patent system is to provide an incentive to research and development, in the area of pharmaceuticals, for the development of new drugs. Looking to the longer term, and as I have men-

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tioned earlier, the effects of the TRIPS agreement will only become apparent in the longer term, the question is to what extent will patent protection lead to more research and development aimed at the better availability of drugs to treat diseases in India? The absence of patent protection for pharmaceutical products in a substantial number of major developing countries has meant that there has been little incentive for the private sector to engage in research and development on the treatment of diseases more prevalent in these countries, especially tropical diseases. This will change: most developing countries will become WTO members and will have to provide patent protection. Moreover, rapid economic development in Asia and Latin America is making developing country markets increasingly important. India, which has huge resources of talented scientific and technical manpower and a sophisticated infrastructure in the pharmaceutical area, would appear to be well placed to take advantage of these opportunities. The extent to which India will be able to do so—whether through the movement of some of its leading drug producers into research-based activities through joint ventures with foreign companies or through attracting greater investment from the foreign research-based companies—will depend not only on the patent regime but on other government policies. One such policy is that affecting prices. If prices for pharmaceutical products, especially patented ones, are so severely controlled that production is scarcely profitable, there will be little incentive to engage in research and development and little money to finance it. This then reverts to the point made earlier: the extent to which prices for patented products will be allowed to rise above those that would prevail in a non-patent situation is essentially related to the incentives that the government wishes to provide for research aimed at the development of new drugs.

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The author has asked that it be made explicit that this editorial was invited by The National Medical Journal of India. This is reprinted here by permission of the Editor, The National Medical Journal of India. Interested readers will recall that a previous leading article in the CMJ (1994; **39**: 3-4) gave a different viewpoint on the GATT TRIPS agreement.

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Leading article

An optimistic approach to treatment of vitiligo

Ceylon Medical Journal, 1995; **40** : 94-96

Vitiligo is an acquired macular depigmentation of the skin with some genetic predisposition. It occurs in about 1% of the population world-wide (1). However, it is more apparent in the dark skinned races and in them the psychosocial impact is much greater.

In vitiligo the depigmented macules are devoid of melanocytes. There are several theories to explain the aetiology of vitiligo, viz. an autoimmune theory, neurogenic theory and self-destruct theory(1). The autoimmune theory can explain most of the phenomena associated with vitiligo(2). The association of vitiligo with other autoimmune diseases such as diabetes mellitus, pernicious anaemia, Addison's disease and thyroiditis is well known. But detailed investigations to discover such associations are not necessary in every vitiligo patient, unless there is another indication in the history or clinical examination(3).

There are many choices available in the management of vitiligo and these should be discussed with the patient. Sometimes the patient needs only reassurance and advice. A strong commitment by both patient and physician is necessary for successful management. Generally, focal and segmental types of vitiligo carry a better prognosis than extensive disease or vitiligo of finger tips and lips. Patients should be told that there is no one quick cure but with appropriate long term therapy, and sometimes with adjunctive cosmetic camouflage, satisfactory results can be achieved.

Options for management of vitiligo are discussed below. Sometimes, several treatment modalities are used to obtain optimum results.

Topical therapy

Local steroids

Where the lesions are small, potent steroids (betamethasone valerate, fluocinolone acetonide etc.) are often effective (4). On flexures and the face less potent steroids are preferable. Regular assessment is required to detect skin atrophy. Once improvement is seen (in 6 to 8 weeks), the application can be changed to a less potent steroid. A steroid-free interval of 2 to 4 months is recommended after continuous use for four months to reduce the risk of skin atrophy(5). If a recurrence of vitiligo occurs, a second or third course of potent topical steroid may be prescribed with careful examination for atrophy. Some recommend super-potent steroids (eg. clobetasol dipropionate) as initial therapy(3,4,6). It appears to bring about repigmentation quicker. More regular follow up is required when super-potent steroids are used. A sensible approach would be to use a super-potent steroid for the initial two weeks (except in children, on the face and flexures), and later to change over to a less potent steroid. After an adequate trial of about two months with local steroids, in a compliant patient, if there is no improvement, it is advisable to change the form of treatment.

Topical psoralens with ultra-violet A (topical PUVA)

Topical 0.1% 8-methoxypsoralen may be applied on the vitiligo patches when the area involved is small. After 30 minutes the patches should be exposed to measured amounts of UVA (0.05 to 0.25 Joules) after which, the patches should be washed well and covered to prevent further exposure to sunlight(4). Once a week treatments are usually adequate. It is regrettable that facilities for PUVA are unavailable in Sri Lanka.

Sunlight may be used as the source of UV radiation, but as the UV dose cannot be controlled, this may cause phototoxic blistering of the treated area.

Topical human placental extracts

Although human placental extracts are claimed to be effective (eg. Melagenina (Cuba), Placentrex (India)) they need to be evaluated further in properly controlled studies(2,7).

Systemic therapy

Oral psoralens with ultra-violet A (PUVA)

Oral psoralen with UVA therapy is the most effective form of non-surgical therapy in widespread vitiligo(4). It carries a much smaller risk of phototoxicity than topical PUVA. Children under 10 years should not be given oral psoralens because of possible eye complications. The recommended dose is 0.6 mg/kg body weight of 8-methoxy psoralen (8MOP). Two hours after taking the tablets the patient is exposed to an artificial UVA source (PUVA) or sunlight (PUVASOL). Initial exposure to sunlight is for 20 minutes and the duration can be increased depending on

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the response. Topical application of liquor picis carbonis (coal tar solution) enhances the phototherapeutic effect of psoralens. The treatment has to be continued twice a week for six months or more(1,8,9).

Systemic steroids

Systemic steroids reduce antibody mediated cytotoxicity against melanocytes in vitiligo patients(10). Long term treatment with oral steroids causes many side effects. Oral mini-pulse steroid therapy is reported to achieve good results in arresting progression in rapidly progressing vitiligo and in repigmentation with negligible side effects(11,12). The regimen recommended is 5mg dexamethasone or betamethasone as a single dose after breakfast on two consecutive days a week for two to four months(11).

l-phenylalanine

Impressive results are claimed for *l*-phenylalanine orally followed by UVA (PAUVA)(13). This is reported to have less phototoxicity than psoralens, but is not yet widely used and needs further evaluation.

Khellin

Oral khellin, another photoactive substance, followed by UVA exposure (KUVA) is also reported to be effective in vitiligo. Because of the risk of hepatotoxicity it is not recommended by most authorities(8).

Surgical procedures

Surgical procedures are indicated when medical and physical therapies fail, especially in localised and segmental vitiligo. These procedures are generally reserved for stable vitiligo (ie. stable for two years or more). Surgical treatment is underutilised in the treatment of vitiligo in this country.

Mini-grafting

This is a useful technique for localised and segmental vitiligo(3,14). Two millimeter punch grafts removed from donor sites (eg. buttocks) are transferred to punched out areas on the vitiligo patches, leaving small gaps between the autografts(14). The maximum distance of pigment migration from a grafted area is 5 mm(15). Experience in this technique is necessary to reduce the 'cobble stoning effect' and to get a uniform colour match.

Epidermal grafts

These may be sheet grafts, blister roof grafts (suction or cryotherapy induced blisters), epidermal cell suspensions or *in vitro* cultured epidermis with or without growth enhancers(15,16,17,18). Some workers in India have used Thiersch grafting (split thickness skin grafting) successfully(19). With the aid of the newer instruments such as the zimmer air dermatome, large epidermal sheets can be grafted with excellent results(20). The grafting is done on dermabraded vitiliginous skin and managed as split thickness skin grafts.

Recently some workers have used the lower third of hair follicles (hair bulbs) as reservoirs of melanocytes for transplantation into vitiliginous areas with good results(21). This technique needs further development.

Cultured melanocytes

Although very expensive and available only in a few centres in the world, cultured melanocytes are very effective in repigmenting vitiligo patches(15,22). The technique involves harvesting melanocytes from a normally pigmented area of skin of the patient, culturing them *in vitro,* seeding on to a collagen film (eg. 50 000 melanocytes per cm^2) and applying these collagen films on dermabraded vitiliginous skin(15,22). With this technique, more uniform repigmentation of large areas can be achieved. Some workers use melanocyte suspensions instead of melanocyte seeded collagen film for transplantation(22). Melanocytes harvested from a small shave biopsy (eg. 5cm) can be used to repigment an area as large as 180cm(22). The repigmentation thus achieved is generally persistent. Cultured melanocyte transplantation holds great promise for treatment of vitiligo.

Tattooing

This method is useful, particularly on the lips where other treatments fail. Iron oxide pigment is used for tattooing the affected areas(23). Occasionally, the colour match may not be exact, and then cosmetic camouflage can give satisfactory results.

Cosmetic camouflage

There are many ways of cosmetic camouflage of vitiligo lesions. Some patients are quite happy to use them rather than undergo other complicated long term therapies(24). 'Dermablend', 'Clinique Continuous Cover', 'Cover Mark' and 'Vitadye', are some brands used worldwide for cosmetic camouflage.

Sun-screens play a useful role in preventing sunburn and sunburn induced Koebnerisation in the vitiliginous areas, as well as in limiting facultative tanning of the surrounding skin(4).

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Complete depigmentation

Where vitiligo is extensive (>40% of body surface area) and when other treatments have failed, this is an acceptable method(1,4). The patient has to be informed that the depigmentation is complete and irreversible. The most widely used drug for this purpose in 20% monobenzyl ether of hydroquinone (MBEH) topically(4,24). It must be applied twice a day for 6 to 12 months. Once complete depigmentation is achieved, the patient should be advised to use a sun protecting (sun-block) preparation topically to prevent sunburn and other UV related sequelae. Occasionally, 20% MBEH can cause local irritation, but generally it is well tolerated. If the completely depigmented patient requests addition of 'some colour' to the skin beta carotene in a dose of 30 to 50mg/day orally is recommended(4).

Counselling and psychological support

This is an important aspect in the management of vitiligo. One should not underestimate the psychosocial impact of vitiligo. Occasionally, psychiatric consultation may be necessary.

Conclusion

The aetiology of vitiligo is still uncertain, although there are many effective methods of managing vitiligo. Treatment has to be selected according to the type of vitiligo, the patient's expectations and compliance and available facilities. With a flexible approach, quite satisfactory results can often be achieved.

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Protective effect of vitamin E in kidney storage solution on renal tissue metabolism in rats

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Ceylon Medical Journal, 1995; **40** : 97-100

Abstract

Objective To determine whether inclusion of vitamin E into kidney storage solutions protects metabolism and tubular ultrastructure of stored rat kidney.

Methods Rat kidneys were flush stored in Marshall's Citrate (MC) and MC+vitamin E (25% of LD 50 and 50% of LD 50) for 24 hours at 0° C. After storage kidney slices were tested for gluconeogenesis and lactate dehydrogenase (LDH) activity, and examined for cellular ultrastructure.

Results Kidneys stored in MC+vitamin E gave higher gluconeogenesis than those stored in MC alone ($p< 0.001$). Tubular ultrastructure was better preserved in the presence of Vitamin E.

Conclusions Vitamin E appears to protect the metabolism and ultrastructure of stored rat kidneys.

Introduction

Preserving viability of donor organs is a prime requisite for successful cadaver kidney transplantation. Oxygen-free radical (OFR) induced tissue damage is known to be an important mechanism underlying cold storage and reperfusion injuries (1). OFR generated during ischaemia and reperfusion damages cells and blood vessels reducing viability of the donor organ. Another mechanism implicated in cold storage damage is intracellular acidosis due to a combination of lactic acid formed during anaerobic glycolysis, and hydrolysis of ATP during ischaemia that produces protons. Recently developed methods for preserving organ viability during cold storage include incorporation of OFR scavengers and appropriate buffers into storage solutions (2).

Glutathione and amino acids such as glycine protect tissues during cold ischaemia by OFR scavenging and improve post-storage viability (2). Vitamin E is effective in conditions characterised by OFR damage (3) because of its antioxidant and free radical scavenging properties. However, the exact mechanism of action and its efficacy in organ storage for transplatation have still not been tested. We sought to evaluate the role of vitamin E in preserving metabolism of cold stored rat kidneys.

Materials and methods

Marshall's Citrate (MC), a currently used kidney storage solution (composition in mmol/l 1: trisodium citrate 27.5, tripotassium citrate 27.3, magnesium sulphate 40.0, mannitol 100.0) was prepared, water soluble vitamin E (Merck) was added and the two solutions given below were constituted.

Solution 1 (E1): MC + vitamin E [dose : 50% of lethal dose 50 {LD 50} ie, the dose that would result in the death of 50% of rats under study (4)].

Solution 2 (E2): MC + vitamin E - 25% of LD 50

Healthy adult Sprague-Dawley rats (200 grams each) were anaesthetised using ether and intramuscular diazepam (0.3 mg/kg). Their kidneys were exposed by a midline ventral laparotomy and perfused using each storage solution through a cannula in the lower abdominal aorta. After perfusion the kidneys were harvested and placed in the respective solutions in ice at 0° C for 24 hours. The kidneys of the two groups of rats were perfused (with E1 and E2 respectively) under identical conditions (n=10 in E1 and n=5 in E2). Kidneys of the control group (n=11) were perfused with MC alone. The rats were killed after the kidneys were harvested.

At the end of storage the kidneys obtained from all three groups (E1, E2, and MC) were investigated for preservation of metabolic activity by testing for gluconeogenesis, lactate dehydrogenase activity and examined by electron microscopy.

Gluconeogenesis

After storage both kidneys from each animal were placed in Kreb's ringer bicarbonate solution (KRB), (composition in mmol/litre : NaCl 118.5, KCl 4.7 $CaCl_2$ 2.1,

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KH_2PO_4 1.2, $NaHCO_3$ 30.0, $MgSO_4$ 1.2) at 4°C, decapsulated and tested for gluconeogenesis (5). Kidney slices of 0.3mm thickness were made using the McIlwain tissue chopper. Groups of slices weighing 60 to 80 mg after surface blotting, were placed in 2.5 ml of KRB alone and in KRB + 5 mmol/l pyruvate solutions (equal numbers of tubes of both, n=10). Pyruvate was used as a substrate for gluconeogenesis. The tubes were gassed for 60 seconds with 95% : 5% O_2:CO_2 mixture on crushed ice, stoppered and inclubated at 37°C on a rotary shaker for 90 minutes. After incubation the supernatants were decanted and centrifuged for 5 minutes at 300G.

The glucose content of the supernatants was determined using spectrophotometry (5). Glucose production was expressed in µmol/ml/g tissue. The dry weight: wet weight ratio (D/W) of the slices was obtained by weighing before and after oven drying some slices in preweighed breakers and reweighing them once dried. The dry weight of each group of slices was subsequently calculated using the D/W and the wet weight of slices(6). Pyruvate stimulated gluconeogenesis was indicated by the differences between slices inclubated in KRB solution alone and those incubated in KRB+pyruvate.

Glucose production by organs stored in MC, E1 and E2 were compared with each other and statistical significance between these groups was determined by doing the analysis of variance (ANOVA). Students t test was done to determine whether there was statistical significance between MC and E1.

LDH activity

LDH assay was done according to the method described by Marsh et al (2). After the storage period, both kidneys from each animal were placed in KRB solution at 4°C and decapsulated. After bisecting the kidneys the cortex was separated from the medulla. Cortex and medulla were each sliced (0.3 mm thickness each). Groups of slices weighing 80 to 100mg made from the cortex and medulla, were added to 5ml of KRB solution separately and incubated at 37°C for 2 hours.

After incubation the supernatants were decanted, centrifuged and tested for extracellular LDH. The tissue slices remaining were added to 8ml of MC, homogenised and tested for intracellular LDH. Extracellular and intracellular LDH were tested in the cortex and medulla separately using the LDH reagent (Raichem) spectrophotometrically. LDH activity was expressed in units/litre. LDH activity of organs stored in E1 was compared with MC, and statistical significance of these values was calculated.

Electron microscopy

Slices (1mm thick) of kidneys stored in solutions E1, E2 and MC were fixed in buffered gluteraldehyde and examined by electron microscopy at the Medical Research Institute. Fresh unstored kidney slices were examined as control.

Results and discussion

The gluconeogenetic activity showed a significant difference between the means of the 3 groups in KRB+pyruvate and KRB respectively. (F value 15.036 and 8.03 respectively which corresponds to $p<0.001$ and $p<0.01$ respectively). A t test done betwen MC and E1 was significant in KRB+pyruvate and in KRB ($p<0.001$ and $p<0.01$). (Table 1)

Table 1. Gluconeogenesis in rat kidney stored for 24 hours. (µmol/ml/gm)

Solution	Gluconeogenesis in KRB only		Gluconeogenesis in KRB+pyruvate	
	Mean	SD	Mean	SD
MC (N=11)	5.06	2.2	16.05	10.77
Vitamin E1 (N=10)	18.126	11.79	42.48	11.29
Vitamin E2 (N=5)	7.98	3.48	27.52	11.26
F value (for MC, E1 and E2)	8.03		15.036	
P	<0.01		< 0.001	
T value for MC and E1	3.45		5.47	
Ci (confidence interval)	18.126±7.40		42.48±9.45	
P	<0.01		<0.001	

Gluconeogenesis is exclusive to the liver and renal cortex (7). The proximal convoluted tubule is most sensitive to ischaemic damage and therefore glucose synthesis by these cells is a reliable indication of persisting metabolic activity. Our results show that gluconeogenesis is higher when kidneys are flush stored in MC containing vitamin E when compared to MC alone. The gluconeogenetic activity was greater with high concentrations of vitamin E (50% of LD 50) ie. E1.

LDH values did not show any statistically significant difference between the means of MC and E1 (Tables 2 and 3). Increased levels of LDH are indicative of either tubular cell membrane damage or accumulation of lactic acid consequent to anaerobic glycolysis in the ischaemic kidney. The former could be ameliorated by OFR scavengers since free radical attack is a major cause of membrance damage.

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However, free radical mechanisms are not known to contribute to intracellular acidosis in cold stored organs. Our results show that inclusion of vitamin E into solutions has not offered protection in this respect as seen by the LDH levels.

Significantly lower LDH levels would have indicated a lesser degree of intracellular acidosis or cell membrane damage. This could mean that vitamin E was not capable of minimising either pathology, or that the degree of LDH activity was largely dependant on intracellular acidosis, which vitamin E did not lessen significantly.

Table 2. LDH values in rat kidney cortex (U/L)

	Extra cellular LDH		Intracellular LDH	
Solution	**Mean**	**SD**	**Mean**	**SD**
M C (N=4)	376.71	104.3	139.05	37.86
Vitamin E1 (N=4)	317.71	55.27	131.79	29.88
T value	0.999		0.3010	
Ci (confidence interval)	317.71±115.65		131.79±47.26	
P	> 0.05		> 0.5	

Table 3. LDH values in rat kidney medulla (U/L)

	Extra cellular LDH		Intracellular LDH	
Solution	**Mean**	**SD**	**Mean**	**SD**
M C (N=4)	278.88	166.03	121.71	16.8
Vitamin E1 (N=4)	408.33	100.98	130.42	34.23
T value	1.33		0.4568	
Ci (confidence interval)	408.33±190.44		130.42±37.36	
P	> 0.05		> 0.5	

Electron microscopy showed that proximal tubular cell ultrastructure was well preserved in organs stored in E1. The mitochondria were clear with uniform size and shape, and the inner and outer membranes were well defined. Christae were clear and granularity in the cytoplasm was present (Figure 1). Samples from organs stored in E 2 showed changes in the size and shape of mitochondria, ie, less uniform than E1, and their appearance was hazy. Christae were seen but not as clearly as those of E1 (Figure 2).

Slices from kidney stored in MC alone showed gross changes in mitochondria. They varied in size and shape, with illdefined membranes. Intramitochondrial vacuoles were seen. Christae were not clear. Granularity of the cytoplasm was faint (Figure 3). The decline in gluconeogenic

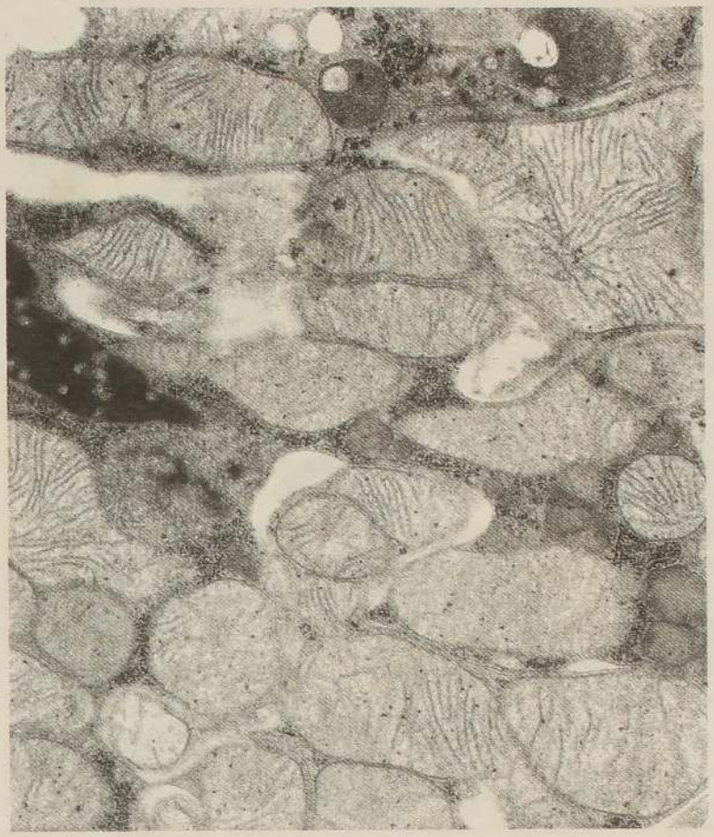

Figure 1: Electron microscopic appearance of rat renal cortex (mitochondria) stored in E1 for 24 hours.

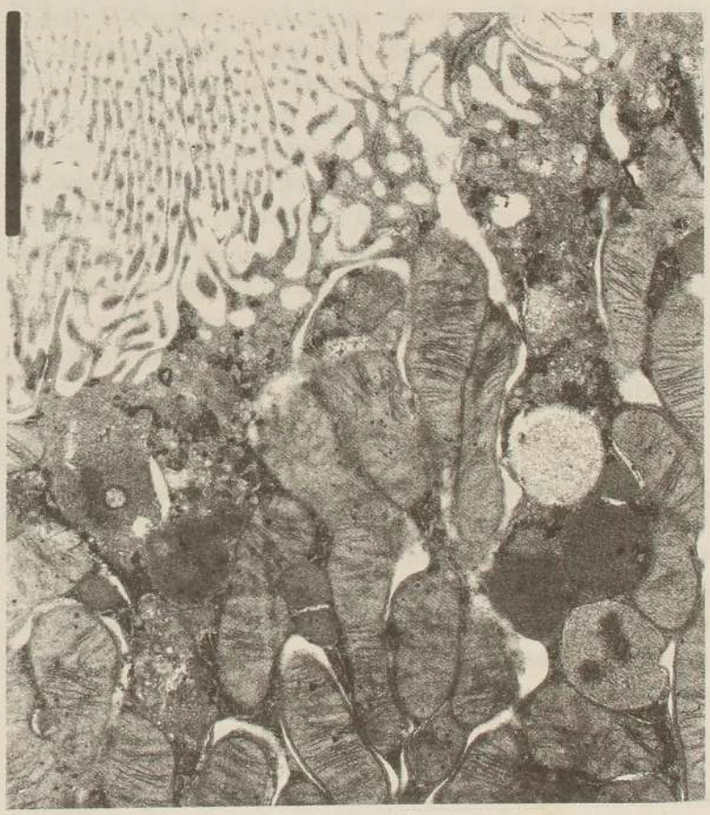

Figure 2: Electron microscopic appearance of rat renal cortex (mitochondria) stored in E2 for 24 hours.

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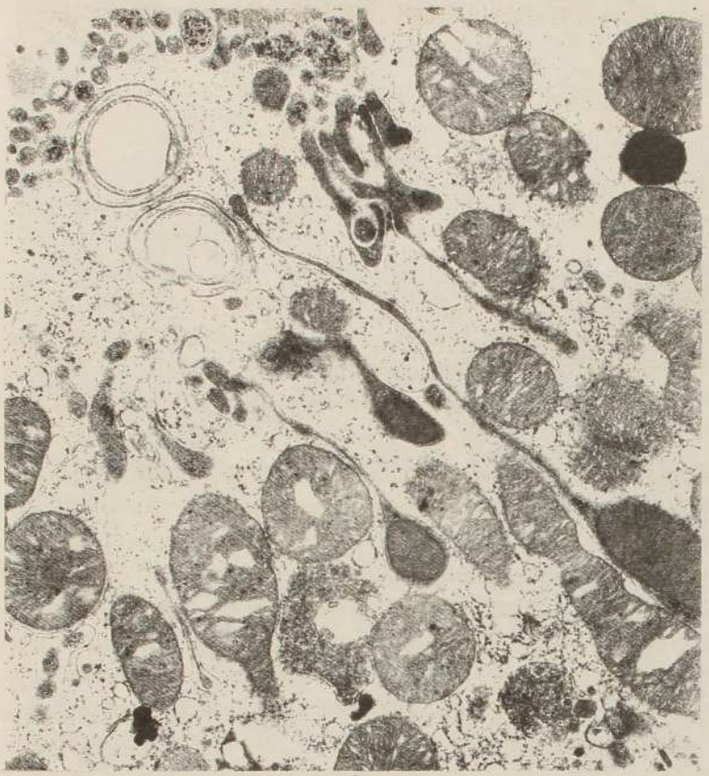

Figure 3: Electron microscopic appearance of rat renal cortex (mitochondria) stored in MC for 24 hours.

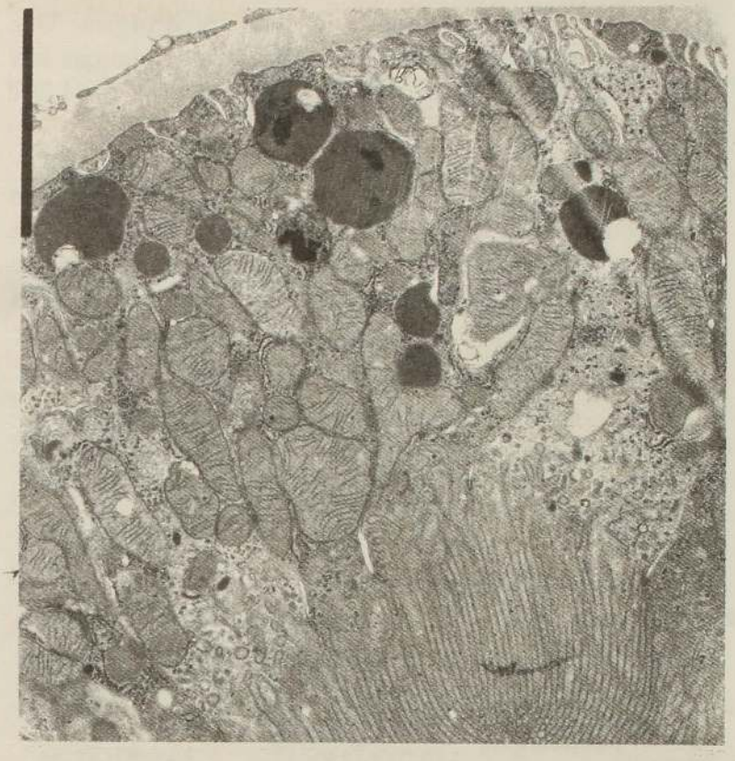

Figure : 4 Electron microscopic appearance of fresh rat renal cortex (mitochondria).

activity in the three groups ie; highest in E1, next in E 2 and last in MC appears to correlate with the changes in cellular ultrastructure as seen on electron microscopy. This correlation supports the theory that ischaemic damage maximally affects the proximal nephron, which is the area where metabolic activity in the normal kidney (Figure 4) is highest. The structure and function of mitochondria of the proximal convoluted tubules seem to be better preserved in the presence of the higher dose of vitamin E as used in this study.

Conclusion

Our results indicate that vitamin E has a role in minimising cold ischaemia generated loss of organ viability and cellular architecture. This is presumably due to its free radical scavenging property. In addition to the period of cold storage, OFR generation is mostly seen during reperfusion of the transplanted organ immediately after revascularisation.

Acknowledgements

We thank NARESA for funding this study.

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The Stamy procedure: A retrospective analysis of clinical outcome in stress incontinence

Deepal S Weerasekera[1] and **Kapila K Gunawardena**[2]

Ceylon Medical Journal, 1995; **40** : 101-102

Abstract

Objective To review the clinical outcome of treatment by the modified Stamy procedure in 26 patients with genuine stress incontinence.

Design A retrospective study of women with stress incontinence who underwent a modified Stamy procedure over a 2-year period between January 1991 and January 1993, of postoperative complications and the success rate three months after surgery.

Subjects Twenty-six women presenting with symptomatic stress incontinence.

Interventions All patients underwent a modified Stamy procedure. They were reviewed in the gynaecology clinic after three months.

Main outcome measures All patients were assessed by clinical examination for postoperative complications, subsequent voiding difficulties, and for recurrence or persistence of incontinence.

Results The most common complications were retention of urine (23%), infection (19%), postoperative persistent pain (12%), urge incontinence (8%) and primary haemorrhage requiring transfusion (4%). The stress incontinence was subjectively cured in 81% and objectively cured in 72% when examined at three months postoperatively.

Conclusions Modified Stamy procedure is a useful operation for women with stress incontinence and it is associated with a low incidence of postoperative complications.

Introduction

By definition genuine stress incontinence refers to involuntary loss of urine through an intact urethra associated with sudden increase of intra-abdominal pressure in the absence of detrusor activity (1). In contemplating surgical treatment for urinary incontinence one has to consider first whether surgical treatment is appropriate and secondly which of the many operative procedures described is likely to give the greatest prospect for cure with the least risk of side effects. Since their introduction in 1959, the transvaginal needle suspension procedure for stress incontinence has become a popular operation (2). The procedure described by Stamy is simple and easily performed. Where there is evidence of voiding dysfuntion pre-operatively the operation also carries very little risk of further compromise(3). In countries such as Sri Lanka with no facilities to perform preoperative urodynamic investigations this procedure can be considered very appropriate. Our study was undertaken to review clinical outcome of the Stamy procedure in 26 women with clinically diagnosed genuine stress incontinence.

Subjects and methods

Twenty-six women with a primary complaint of urinary incontinence were studied. All patients were operated at the General Hospital, Anuradhapura. They had a systemic diagnostic assessment that included a history and physical examination, clinical demonstration of stress incontinence, urine culture, and assessment of fitness for anaesthesia. Patients with second and third degree genital prolapse were considered unsuitable for this procedure. The average age of the patients was 49 (range 34 to 72) years and their average parity was four (range 1 to 9). Seven patients (27%) had undergone previous surgery for correction of stress incontinence. Seventeen (65%) were postmenopausal. Their mean weight was 6.8 kg (range 45 to 78 kg).

Procedure

All patients were treated with the modified Stamy procedure (4). Two suprapubic incisions approximately 2 cm long were made at the upper edge of the pubic symphysis on each side of the midline. An incision was then made in the vaginal wall to expose the pubocervical fascia. Using a Stamy needle with an eyed tip, number one nylon suture was placed on each side for bladder neck suspension. Special emphasis was placed on the inclusion of the pubourethral ligament and endopelvic fascia at the level of the proximal urethra and bladder neck. The elevation of the urethrovesical junction while tying sutures was carried out

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under endoscopic control. All procedures were performed by the authors.

All subjects were reviewed three months after the Stamy procedure. A denial by the patient of any unrinary leakage was considered as a subjective cure. An objective cure was defined as the absence of any urinary leakage during coughing. The presence of urge incontinence however was assessed during follow up.

Results

Table 1 shows the complications observed in the immediate postoperative period. Retention of urine was the commonest problem, defined as the need for bladder drainage for more than 72 hours following surgery. Infection was the second commonest complication. It was defined as fever requiring intravenous antibiotics for more than 48 hours. Patients who needed analgesia for more than two days following surgery were considered as having persistent postoperative pain. Table 2 shows the complications noted three months later. At three months follow up all subjects were voiding unine with good control. Postmicturition residual volumes of less than 50 ml were observed in all patients. Subjective cure rate was 81% and the objective cure rate 72%.

Table 1. Immediate complications of Stamy procedure

	Complication	Number of patients
1.	Retention of urine	6 (23%)
2.	Infection	5 (19%)
3.	Postoperative persistent pain	3 (12%)
4.	Damage to bladder	1 (4%)
5.	Primary haemorrhage requiring blood transfusion	1 (4%)

Table 2. Complications noted three months later

	Complication	Number of patients
1.	Recurrent urinary tract infection	3 (12%)
2.	Urge incontinence	2 (8%)
3.	Urinary retention	Nil

Discussion

The results of our series show that the modified Stamy procedure is associated with a low morbidity rate. Reported cure rates for these procedures range from 40 to 97% (5,6). The subjective and objective cure rates of 81% and 72% in this series are at the upper level of this range. Although these success rates show that selection of cases on the basis of clinical demonstration of streess incontinence is acceptable in a developing country such as Sri Lanka, the availability of equipment to assess urodynamic function would help to quantify the degree of the vesicourethral defect more accurately.

In this series seven patients had undergone previous surgery for correction of stress incontinence. One patient had two anterior coloporrhaphies and a Burch colposuspension performed without relief. In these patients the Stamy procedure can be performed without much difficulty and can be considered as the treatment of choice.

Our study further emphasises the low incidence of postoperative complications of the procedure and its technical simplicity. It is a most appropriate method which could be used more widely in Sri Lanka for the treatment of women with urinary stress incontinence.

Acknowledgements

We are very grateful to Professor Harsha Seneviratna for his invaluable advice and encouragement in the preparation of this paper.

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A locally made mucus aspirator

Antoinette Perera[1]

Ceylon Medical Journal, 1995; **40** : 103-104

Abstract

Examination of nasopharyngeal aspirate for the presence of viral antigens in children with acute lower respiratory tract infections is a standard procedure in establishing a viral aetiology. In the absence of other sophisticated methods such as lung puncture or trans-tracheal aspiration, mucopus aspirated from the nasopharynx can be used even to identify caustive organisms. Here, it is essential to perform a microscopic examination in addition to culture.

The disposable mucus aspirators used in other countries are expensive and are not practical for routine use in our country. This paper describes how a mucus aspirator was turned out with low cost heat resistant materials that are locally available. The aspirator is steam sterilisable and can be used with a disposable F8 gauge feeding tube. The cost of one aspirator is about Rs. 100.

Introduction

Acute lower respiratory tract infections are a major cause of illness in children throughout the world. In developing countries such as Sri Lanka, it is a major cause of death(1). Studies on acute lower respiratory tract infections show that both bacteria and viruses have been isolated in varying proportions(2) and that in some developing countries, bacteria have been identified as the major causative agent (3,4).

In the identification of bacteria blood culture has limitations due to low sensitivity. Tests on respiratory secretions could be relied on, but difficulties are encountered in obtaining a specimen. A reliable specimen of respiratory secretions can be obtained only by use of invasive mothods such as lung puncture, bronchoalveolar lavage or transtracheal aspiration. These invasive procedures are no longer considered ethical for use in moderately ill children and for research purposes. Coughed up sputum is a suitable sample, but sputum cannot be obtained from children and there is a great deal of controversy about the interpretation of results.

A specimen of mucopus obtained by aspirating the nasopharynx in children with pneumonia is suitable for both bacteriology and virology (5). It can be treated as sputum and has the added advantage of being relatively free of oropharyngeal contamination. Using a wet smear and a gram stain, a careful microscopic examination for the presence of pus cells and bacteria, followed by culture would help to differentiate between true pathogens and colonisers of the nasopharynx (6). In addition, the sample so obtained is suitable for virological studies.

Disposable plastic mucus aspirators are available for collection of mucopus from the nasopharynx, but these have to be imported and are costly.

Basically, a mucus aspirator consists of a collecting bottle fitted with a cap carrying an inlet and an outlet tube. The inlet tube is connected to a fine plastic catheter which is introduced into the nasopharynx. The outlet tube is attached to a plastic syringe, a hand operated or electrical suction apparatus. A separate screw cap is also available, so that the collecting bottle can be tightly closed before it is sent to the laboratory. This paper describes how a reusable and cheap mucus aspirator was turned out of locally available material.

The universal glass bottle used for urine culture with its screw cap was used as the collecting bottle. A well fitting, leak proof, heat resistant rubber bung was specially designed and was turned out by Richard Peiris and Company Ltd. This rubber bung had two holes so as to carry two glass tubes of 3 mm diameter that were used as inlet and outlet tubes. The glass tubes were cut in two sizes of 8 cm for the outlet and 10 cm for the inlet tube and the ends were fire polished before use. The inlet and outlet tubes were passed through the rubber bung which was then fitted to the bottle. The aspirator thus assembled (Figure 1), together with the screw cap were wrapped in craft paper and autoclaved. At the time of use a disposable F-8 gauge feeding tube was connected to the inlet tube. This was introduced into the nasopharynx. The outlet tube was connected to an electrical suction apparatus by means of an

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intravenous drip-set tube. After collecting the secretions the bung was removed, the bottle closed with the screw cap and sent to the laboratory. The feeding tube was discarded. The rubber bung was sent to the laboratory for preparation before reuse.

The total cost of the aspirator is as follows.

Item	Rs. Cts.
Universal glass bottle	50.00
Rubber bung	18.50
Glass tubing	22.42
F8 feeding tube	11.80
Total cost	100.72

The main advantages of this apparatus is that it is cheap, reusable, and steam stevilisable. All the items can be cleaned easily. It can be turned out of material available in any laboratory. In addition, only a few of these need to be made even for a large study. The commercially available mucus aspirator and the locally turned out aspirator are shown diagrammatically in Figure 1.

Acknowledgements

I thank Dr Nalini Withana of the Medical Research Institute for her expert guidance in designing the apparatus, Mr Upali Hettiarachichi of the Medical Research Institute for help in producing the apparatus and Dr Perera, paediatrician, Lady Ridgeway Hospital for supervision of the study.

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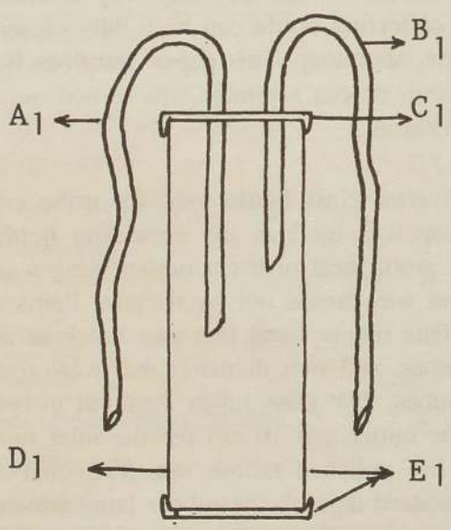
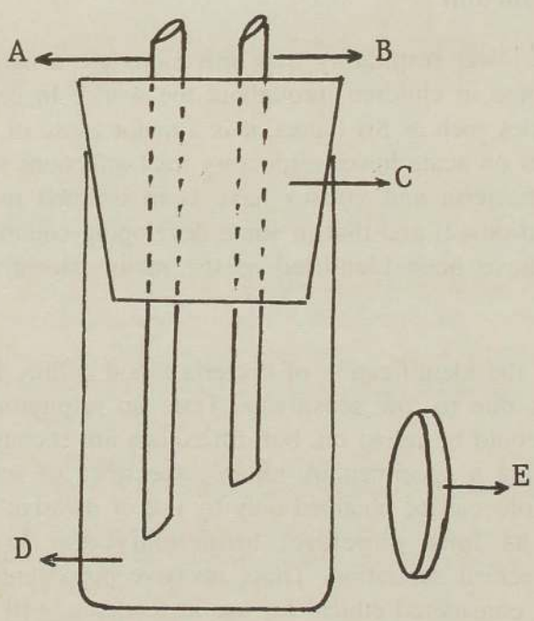
(a) Commercially available aspirator



A1 - Inlet tube (plastic)
B1 - Outlet tube (plastic)
C1 - Plastic cap
D1 - Collecting bottle
E1 - Screw cap

(b) Locally made aspirator



A - Inlet tube (glass)
B - Outlet tube (glass)
C - Rubber bung
D - Glass bottle
E - Screw cap

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Emergency femoral arteriography in lower limb vascular trauma

A Ramanathan[1], D S Perera[2] and A H Sheriffdeen

Ceylon Medical Journal, 1995; **40** : 105-106

Summary

There are difficulties in obtaining emergency arteriographic evaluation in lower limb vascular trauma even in the best centres in the world. Ten emergency room arteriograms were performed at the new Accident Service of the General Hospital, Colombo from February to October 1992 by the vascular team, using a venous cannula and improvised tubing systems. The indications were, absence of distal pulses with closed injury to the limb, previous attempts at repair, injury to the limb at more than one site and multiple shrapnel injury. A traumatic arteriovenous communication was shown in one of the arteriograms. Unnecessary exploration of the artery was prevented by the demonstration of a patent femoropopliteal segment in two cases. The average delay caused by this procedure was less than one hour, which compares well with centres in the West. Provision of an arteriogram kit at the Accident Service will help to overcome practical problems.

Introduction

Arteriography is a key investigation in the diagnosis of vascular occlusion and traumatic disruption (1,2). Even in the best centres in the world, obtaining emergency arteriography is difficult, and associated with considerable delay (1,3). Many centres follow a policy of one shot emergency room arteriograph (1,3).

Although occasional emergency room arteriograms have been done previously in Sri Lanka, a regular policy of doing this investigation whenever indicated, was followed by our team from February 1982. The purpose of this study was to see whether it was feasible for a medical officer not trained in radiology to perform this procedure successfully and whether such a procedure done under the prevailing conditions in the Accident Service significantly delayed definitive treatment. Then arteriograms were done from February to October 1992, at the new Accident Service of the General Hospital, Colombo. During this period, 30 cases of lower limb vascular trauma were admitted to this unit.

Methods

Arteriograms were performed by the registrar. Since Seldinger catheters and arteriogram sets were not available at the Accident Service, an 18-gauge intravenous cannula was used. A three way system used for central venous lines was modified and connected to the cannula when it was available (figure 1). Heparinised saline (10000u/l in a 50ml syringe) was used to flush the artery. After placement of the xray plate at the appropriate site, the procedure was performed under local anaesthesia. The cannula was directed upwards and medially. Once inside the artery, it was anchored to the skin with plaster and the necessary connections assembled. A bolus of 20ml undiluted 75% Urovideo® was injected and the xray taken after appropriate timing. If further distal views were required, or if the timing was wrong, a repeat xray was taken after injection of a further 20ml. No lateral xrays were taken. A maximum of 60ml of contrast was used. Between injections, the vessel was flushed with heparinised saline.

Results

Of 30 patients seen with vascular injuries, 20 had clinically obvious arterial disruption and were explored. In 10

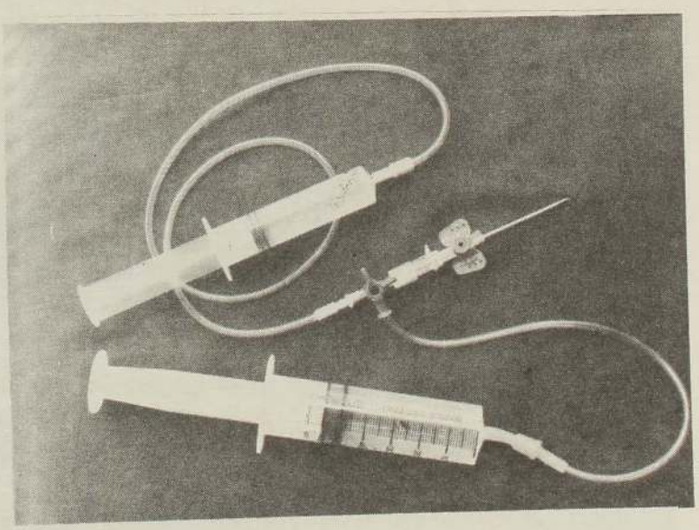

Figure 1

1 Registrar, General Hospital Colombo. 2 Technician, Vascular Laboratory, University Surgical Unit and 3 Professor of Surgery, University of Colombo.

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patients arteriograms were performed when there was doubt whether any vessel was injured, or doubt about the site of injury. Retrospective analysis indicated that the indications for arteriography were the absence of distal pulses with one or more of the following: (a) closed injury to the limb (4 cases), (b) previous attempts at repair (4 cases Figure 2),

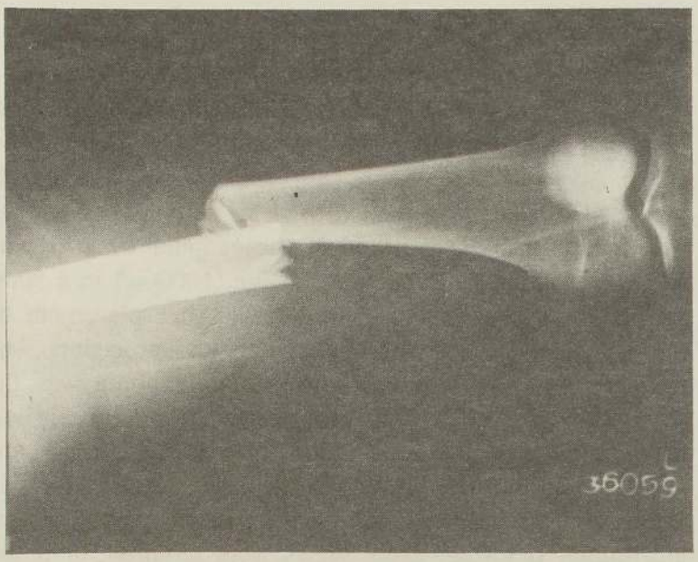

Figure 2

(c) injury to limb in more than one place (2 cases) and (d) multiple shrapnel injury (1 case). A traumatic arteriovenous communication was revealed in one case. Unnecessary exploration of the vessel was prevented by the demonstration of a patent femoropopliteal segment in two cases. One had a closed fracture of the femur (figure 3). The other had fracture of the lower end of the femur and

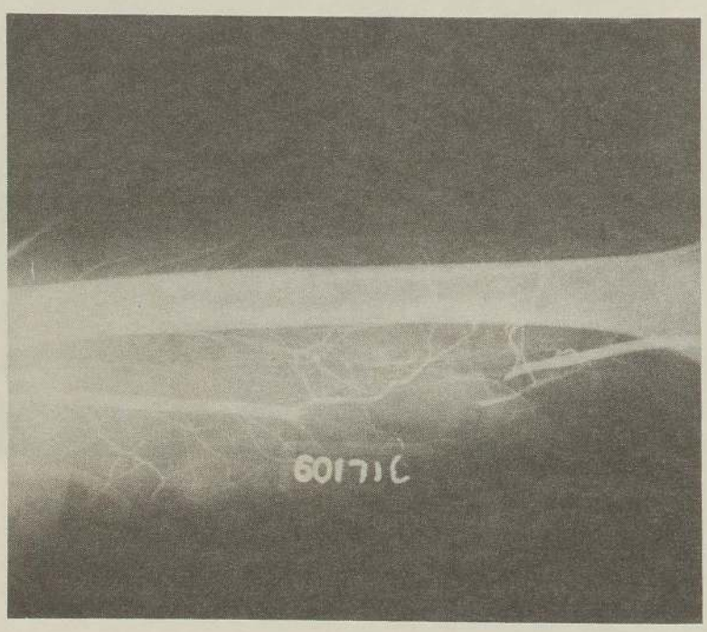

Figure 3

a fracture of the tibia and fibula of the same limb. The arteriogram showed that the site of injury was well below the knee joint, and no repair was attempted. In both these instances the limbs survived. The average delay for carrying out an arteriogram was less than one hour. There was one failure.

Discussion

Our experience confirms that a policy of selective emergency arteriograms should be followed in Sri Lanka. The priority in our policy was to prevent acute limb ischaemia and not to detect potential late sequelae such as false aneurysms and arteriovenous fistulae, which have been the overriding concern in some centres in the West (3).

The average delay for doing the emergency arteriogram compares well with centres in the West (3). In one centre in Houston this delay was less than one half hour (3). Delay could be minimised if a policy regarding indications for arteriography are laid down as guidelines for surgeons working in the accident service (3). The provision of an arteriogram set would make the implementation of this policy easier and further reduce delay. Until a registrar in radiology is available in the Accident Service for emergency arteriography, it is necessary that surgical registrars should be able to carry out emergency arteriograms. The main problem encountered was the scarcity of a proper three way tubing system. Provision of an arteriogram kit would remove such problems and enable the surgeon to perform completion arteriograms after surgery to determine adequacy of the anastomosis.

Timing of xrays was done manually by us and could improve with experience. There was one failure in this series due to inability to retain the cannula inside the artery in an obese uncooperative patient.

Conclusion

Emergency arteriograms are an essential component of the facilities that should be available in centres treating patients with vascular trauma. Providing a policy and guidelines for emergency arteriograms, equipment and training would enable surgeons to give such patients a better care.

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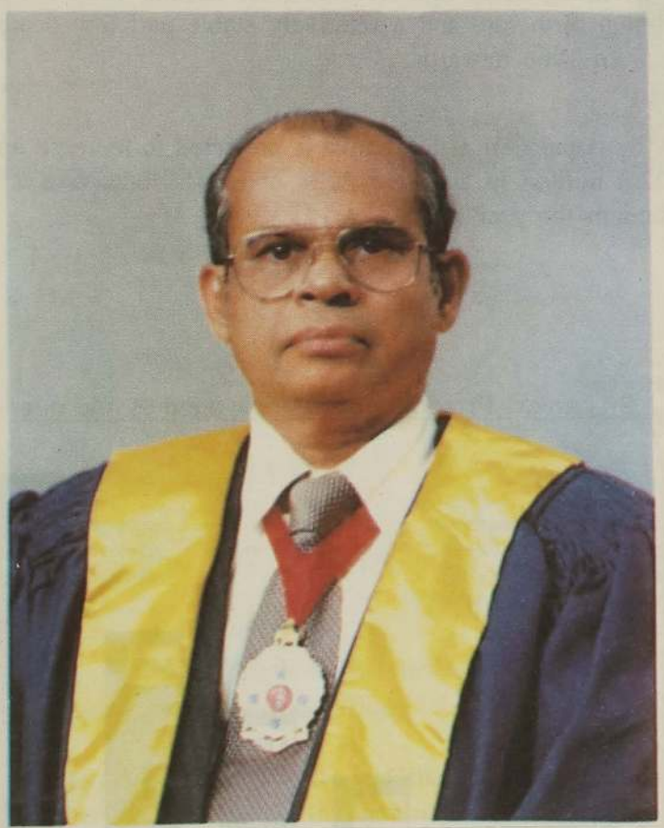
Presidential address

The health services of Sri Lanka present and future

Lucian Jayasuriya[1]

Ceylon Medical Journal, 1995; **40** : 107-115



Achievements of Sri Lanka in human development

As Sri Lankans we can be justly proud of our human development profile when we consider that ours is a poor country.

Since 1990 the United Nations Development Programme has developed the "Human Development Index" (HDI) as a measure of relative socio-economic progress of nations.(1) The HDI enables us to evaluate progress over time and to determine priorities for policy interventions. It permits instructive comparisons of experience of human development in different countries. The HDI is a composition of three basic components of human development, namely, longevity, knowledge, and standard of living. Longevity is measured by life expectancy; knowledge by a combination of adult literacy and mean years of schooling; and the standard of living by purchasing power, based on real GDP *per capita* adjusted for local cost of living (purchasing power parity or PPP).

Table 1. HDI 1991/1992

Country	HDI Value	HDI rank (among 173 countries)	GNP per capita randk	GNP per capita minus HDI rank
Canada	0.932	1	11	10
Switzerland	0.931	2	1	-1
Sri Lanka	0.665	90	128	38
Pakistan	0.393	132	140	8
India	0.382	135	147	12
Bangladesh	0.309	146	159	13

source: "Human Development Report" 1994

Canada comes first with an HDI of 0.932. Sri Lanka, with an HDI of 0.665, is 90th among 173 countries. Pakistan, India and Bangladesh have much lower HDIs than us. Our GNP *per capita* rank is 128 and HDI rank is 90. This shows that we have done much regarding human development compared to our income. Sri Lanka is classified as a country in medium human development, while our neighbours are in low human development. How have we achieved these remarkable results? This is due to gradual increase of GDP per capita from US $200s in 1970s to US $500s in 1990s and also due to the heavy investment in human development by successive governments. Some of the more important of these investments are: (1) free health service within easy access to the entire population; (2) universal free education, including university education (3) free school uniforms and free mid-day meal to school children (4) food subsidies, earlier to all and later to half the population (5) the poverty alleviation programme (6) expansion of government subsidised housing to the poor (7) expansion of water and sanitation facilities.

We still have major problems of : (1) low birth weight babies: (<2.5 kg. at birth), 27% in 1990 (2) Malnutrition under 5 years, 35% in 1990 (3) Iron deficiency anaemia among pregnant and lactating mothers 65% in 1990, (4) People below the poverty line 7 million (1992) (5) Population without access to safe water 5.1 million (1992)

It is difficult to assess the relative contributions of different factors to our good human development status.

1 President, Sri Lanka Medical Association, 1995 (Presidential Address delivered on January 14 1995)

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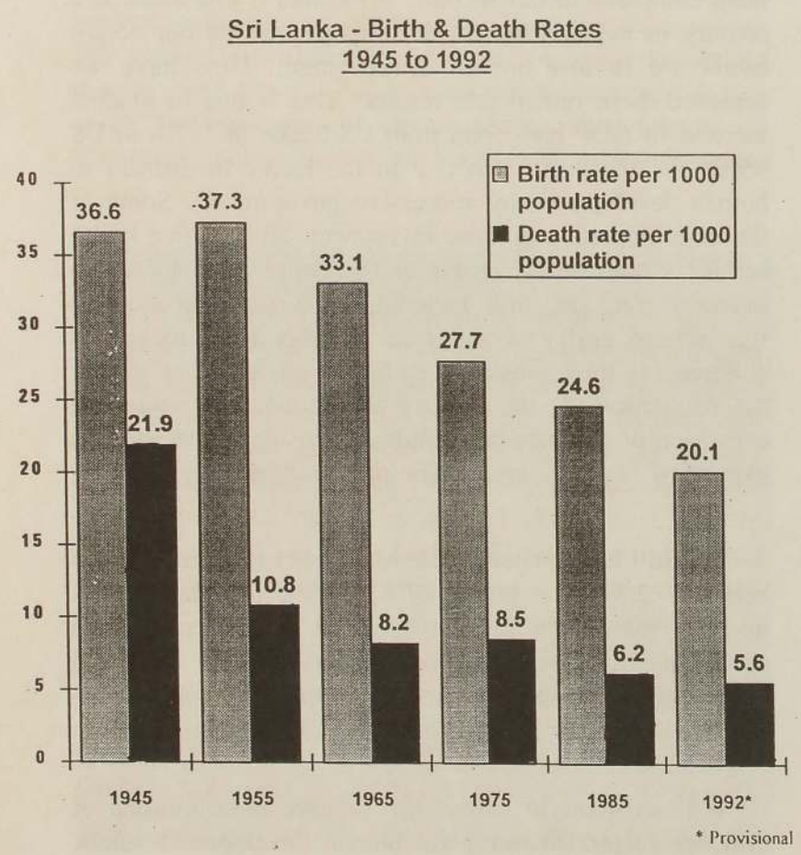
Education, especially of women, has been increasingly shown to be of great importance in human development and for the usage of health services. The health services of Sri Lanka, both government and private, have contributed to our good human development status.

It is known that during the last 15 years, the government's funding of education and health services has been proportionately low. This has been mainly due to the large sums spent on the ongoing conflict in the north and east.

I now propose to discuss the future of our health services, especially its funding by the government. To do this, it is worthwhile to predict what could happen in the future.

Sri Lanka is one of the many developing countries that is undergoing a health transition. This consists of a demographic transition, an epidemiological transition, changing risk environment and widening gap between health problems and health needs.

Figure 1



Adapted from the Annual Health Bulletin 1992

The demographic transition

Sri Lanka has passed through three classical demographic transitions, as shown in Figure 1, Slide 6 - "Sri Lanka's Birth and Death Rates 1945-1992" (2). (1) High birth rate, high death rate till about 1946 (2) high birth rate and declining death rate from 1947 to around 1966 (3) a declining birth rate and a relatively stable and low death rate from 1966 onwards.

The population of Sri Lanka is projected to increase up to 22.8 million in the year 2021 and stablise around 25 million in the year 2050.

Figure 2

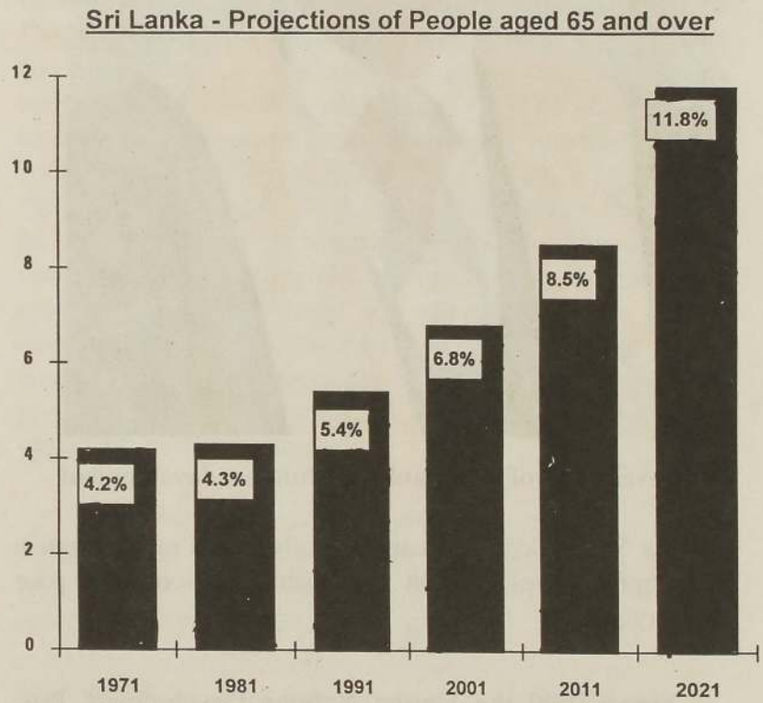


Figure 2 shows - Projections of People, Aged 65 years and over in Sri Lanka Today only 6% of our population is over 65 years of age. This will gradually rise to about 12% in the year 2020.

The demand for personal health services is a function of the total size of the population, sex and age structure and the sex-age, specific morbidity. Health care requirements are high at birth, gradually decline to a minimum at about the age of 15, remain relatively low until around age of 50, and thereafter rapidly increase until death.

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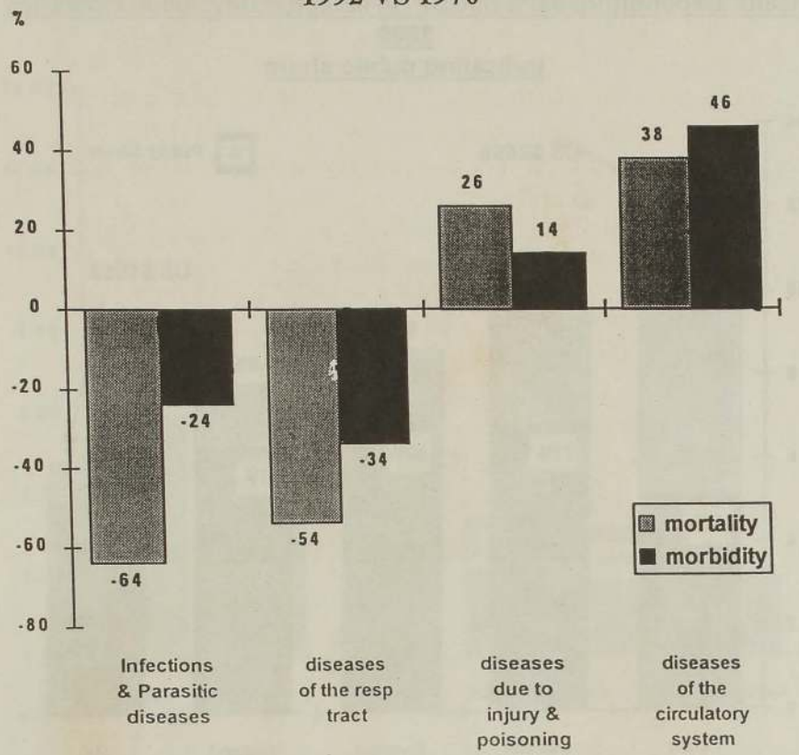
Figure 3

Changes in the leading causes of hospitalization 1992 VS 1970



Adapted from the Annual Health Bulletin 1992

The epidemiological transition

Figure 3 is a comparison of the causes of hospitalization in 1992 and 1970. In Sri Lanka, while the mortality due to infectious and parasitic diseases is declining, the morbidity due to these diseases has not kept pace. This is also true of diseases of the respiratory tract (2). Diseases due to injury and poisoning and diseases of the circulatory system are now the cause of greater morbidity and mortality. Cancers and mental diseases are on the increase. We are in an epidemiological transition. Sri Lanka now has a "double burden" of disease, the diseases of developed countries and those of developing countries. Sri Lanka's health services will have to continue to manage diarrhoeal diseases, malaria, acute respiratory infectory infections and malnutrition including micronutrient deficiencies, while maintaining the expanded programme of immunisation.

It will also need to face the increased burden of disease due to ageing of the population. In addition, changing lifestyles have led to an increase in diseases related to drugs, smoking, alcohol, inappropriate nutrition, accidents and poisoning. Consequently, the demand for health services will increase. Higher levels of income and education, accessibility to information about health and health facilities themselves will also contribute to the increase.

Non-communicable diseases and disabilities due to injury will demand more complex health services. The health personnel would need to have higher level of specialisation. Sophisticated technology would have to be used for diagnosis, treatment and rehabilitation of these patients.

Therefore, more funding would be needed for health care services. This is especially true of hospital services because of the greater complexity of services needed and demanded. The greatest impact of health transition would be seen in hospitals.

Already the demand for quality hospital services is greater than the supply, as seen by the over utilization and overcrowding in the tertiary care hospitals.

Hospital beds in Sri Lanka

Table 2. Hospital beds - Sri Lanka, 1992

Government	Private	Total	Per 1,000 Population
48,061	1,886	49,947	2.87
With Specialist Care:			
26,659	1,886	28,545	1.64

Sri Lanka is short of hospital beds. Table 2: shows Hospital beds in Sri Lanka in 1992. In 1992, Sri Lanka had 48061 beds in the state sector (2) and 1886 beds in the private sector. This amounts to 2.87 beds/1000 population, which is very low. Of the beds in the government hospitals, only 260659 beds were in hospitals with specialist care. The rest were really general practitioner beds.

If one considers the number of beds for which specialist care were available in Sri Lanka, the beds per population ratio comes to 1.64/100 population. Our beds per population ratio has seen a gradual fall during the last 20 years, as shown in Table 3 (2). In developed countries, the beds per 1000 population ranged from 4.7 in the USA to 12.8 in Sweden in 1989. We have to supplement hospital beds, especially those beds for which specialist care is available. Therefore, money cannot be transferred from curative services to preventive services.

Table 3. Hospital beds in Sri Lanka government sector

	1970	1975	1980	1985	1992
Beds	39,173	40,761	43,389	44,861	48,061
Beds/1,000 population	3.1	3.0	2.9	2.8	2.8

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Provision of comprehensive promotive, preventive, curative and rehabilitative health care free of direct cost and within easy access to the entire population has been the hallmark of the health policy of Sri Lanka. For this purpose, a comprehensive health care infrastructure has been developed throughout the years and we proudly proclaim that anybody in Sri Lanka has access to a government health facility within three miles of his home.

Financing of health services

When one quantifies all health expenditure, it is been estimated that Sri Lankans spend, in their private capacity, a little more than what the government spends. The private expenditure on health was estimated to be about 1.9% of the GDP in 1993, while the government expenditure was 1.8% of the GDP. The private expenditure, however, is mainly for out-patient care. In-patient care in the private sector could be afforded only by a small percentage of the population. Even this is in some measure paid for by insurance schemes, especially for the staff of large mercantile establishments.

Table 4 shows government expenditure on health from 1962/63 to 1992 (3). In the 1960s Sri Lanka allocated about 7.5% of the government expenditure for health services. This was over 2% of the GDP. Today expenditure on health services is about 4% of government expenditure and about 1.5% of the GDP. The maintenance of even these figures was due to relatively high capital expenditure. Most of the capital expenditure had been derived from foreign loans or grants. If these loans and grants were not available, the government health services would have been even less well funded. It is apparent that the priority given to the health sector relative to other government sectors has declined over the years.

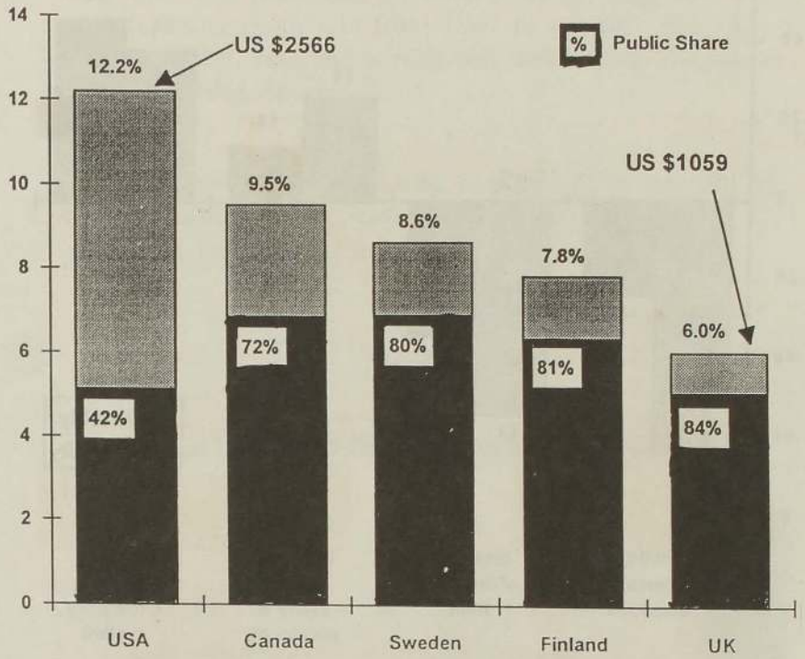
Table 4. Government expenditure on health

	Total Expenditure (Rs. Million)	At 1974 Constant prices Rs. Million	As % of total Govt. Expenditure	As % of GDP
1962/63	130	-	7.5	2.2
1969/70	143	-	7.5	2.1
1977	485	358	5.5	1.3
1982	1,181	417	3.3	1.2
1989	4,672	877	4.5	1.9
1992	6,392	824	4.1	1.4

Source: *"National Health Policy Sri Lanka 1992"*

Figure 4

Health Expenditure as % of GDP in selected Developed Countries 1990 indicating public share



Adapted from OECD Health Systems - Facts & Trends 1960-1991

What percentage of the government budget should be allocated for health? What percentage of the GDP should be spent on health? There are no sure answers to these questions. It would be useful to compare expenditure in some selected countries in 1990 - the year for which these statistics are available. Figure 4 shows Expenditure on health, as a percentage of the GDP in selected developed countries 1990, indicating public share (4).

The USA spends the highest percentage of the GDP and its public share is the lowest. The health system in the USA is mainly privately funded. Although it spent US $2 566 per capita in 1990, there were over 30 million citizens without access to health care.

The other countries shown in the Table, Canada, Sweden, Finland, the United Kingdom, have health systems that are mainly government funded. It is seen that the percentage of the GDP spent is lower, while it is known that the standard of health care is equal or better than that of the USA. More significant is that all people have access to health care in these countries. From this, we could conclude that when the health services are government funded, the cost to the nation is less for the same quality of service. Figure 5 shows Expenditure on Health, as a percentage of

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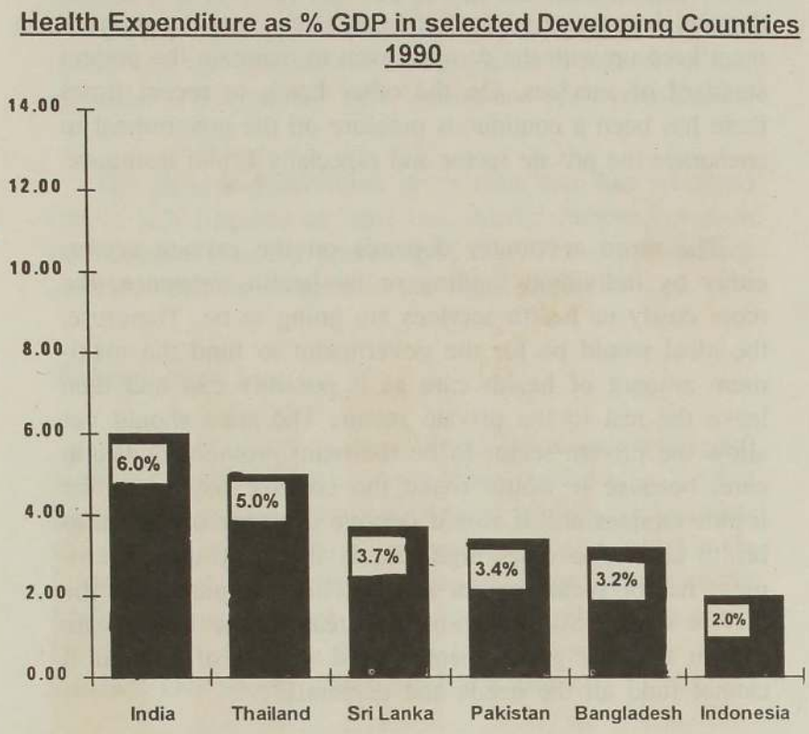
Figure 5



Adapted from the Human Development Report 1994

the GDP, in selected developing countries 1990 (1). When one comes to developing counties, the percentage spent on health sector varies from 6% in India to 2% in Indonesia. The average expenditure for countries with medium human development, such as Thailand and Sri Lanka was 3.9% of the GDP.

What is the ideal we have to aim at and agitate for? As we saw earlier, the percentage of the GDP spent on health is not the only criterion on which the standard of health care depends. It also depends on how the health services are organized and whether we get value for the money we spend. It is accepted that government funded health services are cheaper regarding value for money. The provision of health services may be by government or others.

In Sri Lanka the people already spend more than the government on their health care. To make this expenditure efficient, it is necessary to control private expenditure on health care, especially the money spent on in-patient care in private hospitals. Coming back to the percentage of the GDP spent on health, I think that we should strive to spend at least 5% of the GDP and also try to keep the government's share to at least half of it. It is important to keep the government's share to at least this amount for the national good as a strong government health care system will have a stabilising influence on the private health care.

In 1994, while the estimated health budget was Rs. 8.2 billion, the estimated defence budget was Rs. 25 billion. Even if peace comes to the North and East, the subsequent reduction of the defence budget will be a very gradual process. Today we have an underfunded government health service, which is faced with increasing demands from an educated public.

Table 5. Comparison of expenditure on patient care services by Ministry of Health & by Provincial Councils 1992

Ministry of Health	
Expenditure (Rs. Mn)	1,582
In-patients (in '000s)	586
Out-patient (in '000s)	2,549
Provincial Councils	
Expenditure (Rs. Mn)	1,647
In-patients (in '000s)	2,100
Out-patients (in '000s)	27,432

The establishment of provincial councils has further compounded the problems of the health services. If we evaluate the financing of the provincial health services, we see that they have received step-motherly treatment, as shown in Table 5. In the year 1992, the provincial councils received Rs. 65 million more than the Ministry of Health for patient care services, but catered to 3.4 times in-patients and 10.8 times out-patients.

The government health services - the present status

Even taking into consideration that most of the beds in the provincial health service are general practitioner beds, the funding of the provincial health service appears to have been grossly inadequate. This leads to limited facilities in the hospitals managed by the provincial councils, especially the smaller institutions which have very poor facilities.

This results in the inevitable under utilisation of the peripheral facilities and over utilisation of secondary and tertiary care facilities. The rural sector suffers inequity of access to quality services.

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By-passing of the lower levels of the government health system and going to the hospitals with specialists, without reference, was a well known phenomenon even before the health services were decentralised under the provincial councils, but those working in the health services perceive that the by-passing has increased during the last few years.

About 70% of the government expenditure on health is on patient care service. Even then, due to the underfunding, the hospitals are not functioning optimally. There is a shortage of drugs. It is common for patients to be asked to purchase drugs from outside. Moreover, now it is also common for patients to be asked to get their laboratory tests done privately. This is because the laboratory services are in a poor state. Some tests are not available and the consultants sometimes doubt the accuracy of results of some tests done in hospitals. It appears that the government health services have reached the maximum possible output given the resource constraints.

The private hospital sector

During the last decade, private hospitals have expanded considerably, especially in Colombo. There are now over 2000 private hospital beds, half of which are in Colombo. They have also become the leaders in sophisticated technology. They had the first CT scanner in Sri Lanka. They provide laboratory tests which are not available in the government sector. Although the private hospital sector has expanded, it has depended very largely on government specialist doctors to provide the services. There is a direct correlation between the number of private hospital beds and the number of specialists on the government health sector in any particular city or town.

The government hospital sector has been supporting the private hospitals.

For a long time the private hospitals have had no supervision by the government regarding buildings, facilities, staff and their qualifications and the fees charge. This had led to complaints by the public. The government should take steps to monitor and control the quality of care and charges in private hospitals, both from the patient's point of view and in relation to the total cost to the nation.

The future

What is the option for Sri Lanka regarding the health services? The governments of Sri Lanka has been committed to provide a comprehensive health care service to all its people, free of charge at the point of delivery. This commitment has been gradually eroded, partly due to underfunding and partly due to increased demand. The demand is going to increase further, but can the government keep up with the demand even to maintain the present standard of services. On the other hand, in recent times there has been a continuous pressure on the government to encourage the private sector and especially health insurance.

The more a country depends on the private sector, either by individual funding or by health insurance, the more costly its health services are going to be. Therefore, the ideal would be for the government to fund the maximum amount of health care as it possibly can and then leave the rest to the private sector. The state should not allow the private sector to be the main provider of health care, because it would make the country pay more for health services and it would deprive the poor of access to health care. The other argument is that a strong government health sector exerts a stabilising influence on the private sector. So, what are the areas of the health care system that the government should deliver of fund if it cannot fund all the needs and demands?

Promotive and preventive health services

Firstly, the government has to fund promotive and preventive health services, because these will not be funded by the private sector. Sri Lanka has a very good preventive health service with a fine infrastructure. This has to be maintained. All the monies needed for public health must be provided by the government. Medical officers have always been reluctant to specialize and work full time in public health medicine, because of poor remuneration. The situation holds true even today. Therefore, it is necessary that these officers be provided with special incentives, facilities and allowances.

The preventive health services should increase their orbit by including the prevention of non-communicable diseases related to cardiac ischaemia, alcohol, smoking, accidents and poisoning. All these diseases are bound to be a greater burden on the health services. Therefore, their prevention should receive due attention.

Essential clinical services

The next important thing that the government health service has to do is to guarantee a package of essential clinical services to all. This package should be available to all and therefore, it should be aimed at the lowest institutional level of the health care delivery system. What

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is available at the primary and secondary levels of the institutional health care delivery system has to be reviewed, because it is obvious that the people are not satisfied with it. That is why they by-pass the system. That is why the facilities at the smaller institutions are underutilized and the facilities in the tertiary care institutions are overutilized.

The present government in its manifesto has promised that it will upgrade at least one district hospital in each district each year, by providing X-ray,ECG and laboratory services. This is a move in the right direction.

Tertiary care

The World Bank in the "World Development Report" 1993 (5), recommends to developing countries to "reduce government expenditure on tertiary facilities, specialists training and interventions that provide little health gain for money spent". This recommendation is not relevant to Sri Lanka, because we are not a typical developing country. We have advanced to the level of medium human development. Our people demand quality care.

The question is how to meet the demand of the people for quality care. It may not be possible for the government health services to meet this demand fully, specially as the demand is going to expand. However, the government should strive to meet the maximum possible proportion of this demand.

Advocacy

Advocacy is necessary from all of us who are concerned with the health service of Sri Lanka. We have to demand from the government that it provides more funding for health services. Even with a global shortage of funds, it is possible for any sector to be better funded. We, as doctors, have an important role to play to sensitise politicians and planners about the fact that the government health services are underfunded and that it is necessary to fund them better, at least to maintain our standards of care, even if it is not possible to improve them. Advocacy must be a continuing process, especially by consultants who meet politicians as patients.

Cost recovery

A good look should be taken at some areas where cost recovery is possible. For many decades, the government health services have charged a nominal fee for dentures. We have had paying wards. The monies collected from these have gone to the consolidated fund. We have really not studied about how to increase our user charges. Today we give expensive cardiac pacemakers and expensive joint prostheses free to even those who can easily afford to and would be willing to pay. Therefore, schemes of cost recovery should be worked out where the poor do not lose. Today, there is no initiative for cost recovery because the monies go to the consolidated fund. If at least a part of the monies recovered remain in the institution, there would definitely be an incentive to improve cost recovery.

Improvement of government tertiary care facilities

Finally, I come to what I consider are the most important actions that can be taken to maintain and improve our tertiary care facilities.

Management

Firstly, management of these facilities must be strengthened. Today large hospitals have too few managers. For example, General Hospital Colombo with about 2500 beds is managed by less than 10 people, including the administrative officers and accountants. In my opinion, the number of medical managers that is needed for General Hospital Colombo would be 10. Then only would they be able to get away from crisis management and from day to day matters, be able to plan for the future of the hospital and monitor and evaluate what they hope to implement.

Waste and inefficiency

In 1992, the recurrent expenditure of the General Hospital Colombo was Rs. 486 million, while the recurrent expenditure of the government health services was Rs. 4622 million, that means that the General Hospital Colombo spent more than 10% of ten recurrent expenditure of the government health services, as shown in Table 6: My opinion is that savings are possible if there is a detailed monitoring of all aspects of expenditure on personnel, drugs and dressings, buildings, etc.

Table 6. Recurrent expenditure - government health services compared to that of General Hospital Colombo in 1992

Government	Rs. 4,622 million
General Hospital Colombo	Rs. 486 million
GHC/Government	10.5%

It has been the tradition to spend the money and if it is not sufficient, to ask for more. There has been no at-

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tempt to study how it was spent, to see whether it was spent optimally. There are many examples of inefficiency. Few are discussed below.

There is inefficiency when expensive equipment is bought, but not maintained. For example, how many blood gas analysers are available in the government hospital system in Sri Lanka and how many are functioning?

There are delays in getting investigations done due purely to the lack of junior staff to transport patients to the X-ray department or to send specimens to the laboratory. Ironically, the maximum shortage of staff in teaching hospitals is in the category of junior staff. This is mainly because the vacancies are not filled in time. The filling of vacancies is centralised in the ministry. The staff in the ministry can never be sensitive to shortages of staff in the hospital to the same extent as the managers of the hospital themselves. The recruitment of junior staff, which was at one time decentralised, has become centralized again. Large institutions, such as the General Hospital Colombo, cannot be managed efficiently and effectively, unless the chief executive there is given authority and autonomy. That is a paramount need.

The General Hospital Colombo spent Rs. 43 million on electricity in 1993. It has no energy conservation plan. It spent Rs. 14 million on water in 1993, but there is nobody specifically interested in checking waste of water.

There is a danger that we have excess staff. There are OPDs in large hospitals with much more than the number of doctors that are needed. Three dental surgeons have been appointed to places where facilities are available only for one. When more and more doctors and dental surgeons qualify, there will be pressure to absorb them to government service. If they are absorbed and they do not have work or facilities to work, it would be a waste of resources. Once a person is taken into government service, he has to be paid whether he has work or not. Our system does not allow making people redundant. Already about 50% of the cost of large hospitals is on personnel emoluments. Therefore, it is necessary to see that every position is justified.

I strongly recommend that a powerful unit be established in the ministry to study and implement cost recovery and cost containment. This unit should have sub-units in each tertiary care hospital to look into each such institution. I believe that it is possible to contain costs without affecting quality of care.

How can doctors help?

How can doctors help in making tertiary care institutions more efficient? The seniors, the consultants should get actively involved in management. Attending management committee meetings held on an ad hoc basis is not enough. These committees should be structured so that they can plan for the hospital for at least 5 years ahead. They should be able to decide and recommend on areas of future expansion, what equipment to be brought etc. Clinical directorates should be gradually introduced so that consultants get involved in managing their units, including managing their finances.

Drugs cost about 15 to 20% of the recurrent expenditure of a large hospital. Therefore, doctors have to be conscious of the cost of drugs they prescribe. Not many doctors are aware of the cost of drugs. Information on cost of drugs is not easily available. Doctors have to demand that they always know the cost of drugs before they prescribe.

There is little activity today about quality assurance of patient care activities. Clinical and medical audit and peer review activities have to be brought into the hospital systems by the medical leaders.

Doctors should be committed to their hospital work and be real leaders of the rest of the staff of the hospital. Doctors and nurses in tertiary care hospitals should be the teachers not only to staff in their own hospitals, but also to the staff of all hospitals in the catchment area. For this purpose, training units with full time coordinators should be established in all tertiary care institutions. These units should have facilities of lecture rooms, audio visual equipment etc. The cost of a training unit is very small when compared to the good it can do in continuing education of all staff, especially non-medical staff and staff of peripheral hospitals in particular. Well functioning training units will not only improve the knowledge and skills of staff, but also their morale and therefore efficiency of the service provided.

Summary

1) Sri Lanka has achieved a high human development status;

2) The health sector, and particularly the government health sector, has played an important role in this achievement;

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3) The health transition is going to increase the burden of disease and the demand for health services;

4) The government health services have been underfunded and the provincial health services have been more underfunded;

5) The most cost efficient health services, anywhere in the world, are government funded;

6) Therefore, it is our duty to lobby government to increase government funding for health services:

7) The preventive health service should continue to be funded fully by government. Prevention of non-communicable diseases should come within this orbit. Staff in preventive health services should be better remunerated;

8) The essential clinical package in the periphery must be improved to reduce by-passing and underutilization;

9) Management of tertiary health care facilities have to be strengthened.

They should be given responsibility and autonomy;

10) A powerful unit should be established in the Ministry to study and implement cost recovery and cost containment in tertiary care institutions;

11) Senior doctors should take an active part in the management of the tertiary care institutions to make them more efficient;

12) Private hospitals should be supervised by the Ministry in order to ensure quality of care and to contain national health care costs:

Acknowledgements

I thank Drs. Dennis Aloysius and Chris Uragoda for constructive criticism of my paper, my son Nalin for the figures and my wife Nimala for the great support in my endeavours as a manager.

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Case report

Is it Munchausen syndrome by proxy?

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Ceylon Medical Journal, 1995; **40** : 116-118

Abstract

We describe two cases of children who were victims of illness fabricated by their mothers. Such clinical situations are identified as Munchausen syndrome by proxy (MSP). Although considered a form of child abuse, MSP often goes unrecognised in paediatric practice. The two children involved were unnecessarily investigated, and the underlying problems in the mothers were identified only after several hospital admissions. One mother had a major psychiatric disorder, and the other had serious marital problems. Maintaining a high degree of suspicion regarding inexplicable illness in a child with inappropriate or incongruous symptoms and signs, even when parents behave in an exemplary manner, would help in early diagnosis and management.

Case 1

An eight-month old girl was admitted to hospital for alleged recurrent vomiting of frank blood for three months. She had six previous admissions to two different hospitals during this period. Several other complaints, such as generalised convulsions, and diarrhoea with blood and mucus, allegedly preceded the vomiting. The mother stated that the child was given blood transfusions on three separate occasions.

The girl appeared healthy and active. Physical examination was normal. A full blood count, coagulation profile, liver function tests, stool examination for occult blood, ultrasound scan of the abdomen and barium studies all showed normal results. Throughout the hospital stay no vomiting of any form was observed or reported by the mother. Clinical records of previous admissions could not confirm that the child had received blood transfusions. The only evidence in support was a blood stained cloth produced by the mother. There were no eye witnesses. The mother consistently maintained the story that the child vomits blood, although she never appeared disturbed by the seriousness of her child's illness. The social history of the mother and child was sought at this stage. The father and the maternal grandmother of the child were interviewed.

The parents were married for 18 months. The father worked full time as a gem miner. The mother expressed much distress about alleged excessive alcohol consumption and violent behaviour by the husband. When she was three months pregnant, she left her husband to live with her parents. When the child was five months old she was forced to return to her husband with the child, again to experience a repetition of his violent behaviour. She was afraid that she and her child could be physically harmed by him.

The father accused the mother of keeping the child in hospital to avoid going home. He demanded that they be released from hospital as soon as possible. He had never seen the child vomit blood. He also stated that four months ago, his wife had surgery for an acute abdominal pain. She confirmed this, and the medical records showed a negative laparotomy. The maternal grandmother, however, supported her daughter's story of the child vomiting blood, but on close questioning reluctantly admitted that she had never witnessed it herself. Assessment of the mother did not show any disturbance of the mood, perception, or thought processes. Her personality did not indicate antisocial qualities, or abnormal vulnerability to stress. She was offered counselling to help her solve her social dilemma. Since then she has returned with the child to live with her parents and is now employed. Six months later, the child remains well. Her mother has initiated legal proceedings seeking a divorce.

Case 2

A five-year old girl was admitted with the complaint of episodic difficulty in breathing of four months' duration. The child had seven previous admissions to three hospitals. In addition, the mother complained that the child had progressive loss of appetite, bouts of fever, swelling around the eyes and ankles and reddish patches on the skin. The clinical records of the last admission showed that temperature, observation for development of symptoms, and haematological investigations were normal. The child agreed with her mother on all the physical complaints even

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in the mother's absence. The child did not look ill, had a good appetite and normal sleeping habits, but appeared anxious when questioned about her symptoms. She was admitted to primary school two months earlier, but the mother kept her away from school after two weeks, as she felt the child was too ill.

The child failed to develop any of the symptoms mentioned during hospitalisation but the mother closely watched the child. She was convinced that her daughter had dengue hemorrhagic fever, and that her life was in danger. A few days after admission, the mother summoned the nurses in a state of panic, claiming that her child had stopped breathing, and was dead. She started to violently shake the child, who had to be rescued by the nurses.

The mother, a 30 year old former preschool teacher, was widowed when her businessman husband died of a heart attack two years ago. She lived with her parents since then. According to the maternal grandmother, four months ago, she started claiming that the child had dengue fever. The negative results shown repeatedly on blood reports were rejected. The mother even gave up her job to care for the child. She was not known to be an over-anxious person before this.

The history and mental state examination of the mother showed that she was suffering from schizophrenia. She was also diagnosed to have diabetes mellitus. She responded well to treatment of both conditions. She initially refused to part with the child, but later allowed the maternal grandmother to take the child home. The child returned to school and remained well. Six months later the mother was still under treatment, and was in satisfactory mental and physical health.

Discussion

Both mothers sought treatment for their children claiming serious and potentially life-threatening symptoms. Both hospitalised their children many times, and willingly subjected them to multiple investigations. Parents consciously fabricating illness in their children who then run the risk of exposure to unnecessary and potentially harmful medical procedures, was first described by Meadow in 1977 as Munchausen syndrome by proxy (1). Various presentations of MSP have been described, and it is recognised as a form of child abuse (2,3,4). In all the reported cases, the parent involved was the mother.

These two cases are described with two main objectives. One is to emphasise that the two cases are different in several essential features to those usually identified as MSP in the literature. Secondly, and more importantly, to stress the need for early recognition and appropriate management.

Child abuse is difficult to argue in both cases. One mother was trying to save herself and her child from an intolerable social situation and potential physical harm. The other's behaviour was influenced by abnormal beliefs due to her mental illness.

MSP is also labelled as a malignant disorder of parenting (2). The mother's behaviour in subjecting her child to potentially harmful and painful procedures is interpreted as an attempt to fulfil a psychological need in an abnormal personality. Welcomed distraction from relationship difficulties, or a depressed mood are other identified motives and explanations (3). Personality difficulties could not be detected in either of the mothers. Standardised schedules however, were not used in the assessment of personality. Although fathers were effectively absent in both children, there was no evidence of poor quality care to the children by either of the mothers. The abdominal complaint which resulted in an exploratory laparotomy in one mother, suggests possible Munchausen syndrome in her.

The delay in recognising the underlying problem in both cases was probably due to the stereotyped manner in which doctors behave, where clinical reasoning remains within the narrow range of organic factors. In addition to the risk of permanent handicap or death from invasive medical procedures, children who have had fabricated illness thrust upon them early in life may adopt abnormal illness behaviour as adults and retain it for the rest of their lives (5). The children are also known to participate in the deception (6), and this was noted in one child. Paediatricians and other doctors dealing with young children depend heavily on histories given by parents. However, they also should be alert to warning signals (5) such as illness which is unexplained, prolonged and extraordinary, symptoms and signs that are apparent only in the presence of the mother, treatments that are repeatedly found to be ineffective, mothers who are less worried by the child's illness than the nurses and doctors and families in which sudden unexplained infant deaths have occurred, and families containing many members alleged to have different serious medical disorders. The following plan of management (7) could be useful.

1. Stop all unnecessary tests and treatments.
2. Keep mother and child under careful observation.
3. Obtain a relevant history and mental state assessment of the mother, and look for a possible motive.
4. Make contact with other relevant family members.
5. Obtain access to previous medical records of the child.
6. Look for a possible motive in the mother.
7. Offer the appropriate psychological and social help.

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Case report

Delayed recovery after spinal anaesthesia using 0.5% cinchocaine

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Ceylon Medical Journal, 1995; **40** : 118-119

Introduction

Postoperative neurological complications are rare following spinal anaesthesia. However, isolated case histories of severe deficits, often attributed to previously undiagnosed spinal cord pathology or chemical contamination of local anaesthetic, have been reported. Neurotoxic effects of local anaesthetics too could cause abnormal responses when injected intrathecally. This has not been a previously recognised problem with cinchocaine.

Report of the case

A 36-year old woman was scheduled for emergency caesarean section under spinal anaesthesia. The patient's back was cleaned with cetrimide, surgical spirit and finally with weak iodine solution. 1.5 ml 0.5% cinchocaine was injected into the L4/L5 interspace after free flow of cerebrospinal fluid was obtained, using a 20 gauge autoclaved, reusable, steel spinal needle. The patient was placed supine immediately with a 15 degree left lateral tilt and a pillow under her shoulders. The patient did not develop any sensory deficit up to 10 minutes after the injection, intubation and ventilation. As surgery could not be delayed any further, a general anaesthetic was given using the technique of rapid sequence induction, intubation and ventilation.

The drugs used were thiopentone sodium 300 mg, suxamethonium 100 mg, atracurium 15 mg, 50% oxygen in nitrous oxide, 0.5% halothane, pethidine 50 mg, neostigmine 2.5 mg and atropine 0.6 mg. Syntocinon infusion (20 units) was commenced after delivery of the placenta. The patient was extubated when conscious and sent to the ward. She was not examined neurologically at this stage. Six hours later the patient complained of weakness of both lower limbs. Her muscle power was zero (not even a flicker of movement) in all muscle groups of the lower limbs. She also complained of sensory loss from the epigastrium downwards. Her pulse and blood pressure were stable. Eleven hours later she was examined by the anaesthetist and flaccid paraparesis with muscle power grade two (moves with gravity eliminated) and loss of sensation to cold water and pin prick below L1 dermatome were noted. Position sense was intact. She had retention of urine and was catheterised later in the day. The following morning (24 hours later) her motor power was grade three (able to move against gravity) in all muscle groups, with loss of sensation in L5 and S1 dermatomes. The L2, L3 and L4 segments had patchy sensory impairment. When she was seen by the neurologist later in the morning the muscle power was grade 4 (able to move against mild resistance) in the foot and grade three at the hips and knees.

The knee and ankle jerks were exagerated bilaterally and plantar responses where absent. A clinical diagnosis of transient thoracic myelopathy was made, and as the patient was improving, no further investigations or treatment was considered necessary. Muscle power was normal that evening about 30 hours after the spinal anaesthetic. There were no residual neurological deficits on follow up.

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Discussion

Spinal anaesthesia for caesarean section is becoming increasingly common in Sri Lanka. The agents used are 0.5% bupivacaine (plain and heavy) and 0.5% cinchocaine (heavy). We have used the present batch of cinchocaine ("Nupercaine" 0.5% Astra) extensively on obstetric and non-obsetetric patients and have found it to be safe. The drug dispensed in single dose glass vials in sterile packings is checked for visible cracks before use. The administration set is autoclaved at the Central Sterilisation and Supplies Division of the hospital and is given for use in sealed cotton covers. As such, contamination of either the drug or the equipment seems unlikely.

This leaves us with two possibilities ie, neurotoxicity in a susceptible individual or chemical contamination of the CSF while carrying out the block. Even though epidemiological studies of spinal anaesthesia have indicated a good safety record (1), concern about neurotoxicity resurfaced in the USA in the 1980s following accidental subarachnoid injection of chloroprocaine (2,3). An editorial comment stated that such complications were more likely to follow inadvertant injection of a large dose of 2-chloroprocaine into the subarachnoid space, due either to the drug *per se* or to its effect on the CSF pH (1). Unfortunately, there are very little data on the neurotoxic effects of other local anaesthetics in indexed medical journals. Animal studies on this subject that have been reported are summarised in the following table:

Type of study	Finding
Rabbit vagus nerve	Local irritation with 2-CP but not lignocaine and bupivacaine.
Rat sciatic nerve	No irritation with 2-CP and lignocaine.
Spinal dog	No toxicity with various LA.
Spinal rabbit	Paralysis with commercial 2-CP and sodium bi sulfite but not with pure 2-CP.
Spinal dog	Paralysis with 2-CP but not with bupivacaine or low pH saline.
Spinal sheep	Minimal toxicity with 2-CP, lignocaine, bupivacaine and control solution.
Spinal monkey	Minimal toxicity with 2-CP and bupivacaine.

* 2-CP = choroprocaine; LA = Local anaesthetics. Reproduced from *Canadian Anaesthetists' Society Journal* 1983; **30**: 112.

Rosen in 1982 studied the effect of 10ml of 3% chloroprocaine, 2% lignocaine, 0.75% bupivacaine and Elliot's B solution (Mock CSF) in sheep and monkeys and concluded that all the above agents cause minimal toxicity. He attributed this to mechanical trauma secondary to increased CSF pressure (4). He further stated, "it is well established that small amounts of local anaesthetics injected into the subarachnoid space do not produce neurotoxicity." There is no mention of prolonged neurological deficit due to cinchocaine in the literature and if what we saw in this patient was, in fact, due to cinchocaine, this is the first such report. It could not have been due to the pressure effect described by Rosen as only 1.5 ml was used. The other possibility in this patient is chemical contamination, even though the rapid and complete recovery made by the patient makes this unlikely. The cleaning solutions cetrimide, surgical spirit, iodine or purified French chalk used as lubricant with surgical gloves are some of the possible contaminants. As CSF is a poor buffer (5), the pH of any of these contaminants is unlikely to be altered when introduced intrathecally. As such vascular spasm giving rise to functional derangement of the cord is possible even with small quantities, either due to their direct chemical effect or the pH effect.

In summary, we have described neurological deficits lasting up to 30 hours after intrathecal injection of 1.5 ml 0.5% cinchocaine, most probably due to an idiosyncratic reaction to cinchocaine, though the possibility of chemical contamination cannot be ruled out. Neurotoxicity due to cinchocaine has not been reported previously.

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From the journals

Ceylon Medical Journal, 1995; **40** : 120-121

Pulmonary abnormalities in tropical pulmonary eosinophilia (TPE)

Lung function studies and arterial blood gas analysis in 26 patients with TPE showed a mild restrictive ventilatory defect with airways obstruction and mild hypoxaemia. These patients also had significantly elevated concentrations of serum IgG, IgA and IgM compared to controls, and an eosinophilic alveolitis. Increased levels of fibronectin were demonstrated in the bronchoalveolar lavage fluid. Fibronectin is believed to be one of the important mediators of pulmonary fibrosis in TPE. The authors also state that interstitial fibrosis may occur in chronic TPE, and that low grade alveolitis may persist after a 3 weeks' course of diethylcarbamazine. *The Indian Journal of Medical Research* 1995; **101**: 98-102. We come across cases of chronic or "resistant" TPE and these may be patients who have some of the above mentioned anomalies.

Importance of infections in women with bad obstetric history (BOH)

Maternal infections are an important cause of pregnancy wastage and occurrence of infections is especially important in women with a BOH. In a recent study 200 women with a BOH and 100 clinically normal women were evaluated using cervical culture studies and serology. The presence of genital mycoplasmas, chlamydia, toxoplasma and cytomegalovirus was significantly higher in those with a BOH compared to controls. When fetal outcome was studied toxoplasmosis was associated with abortion (38%), stillbirth (6%), premature delivery (16%) and congenital abnormalities (6)%. Cytomegalovirus infection was associated with abortion (41%), preterm delivery (33%) and congenital anomalies (8%). Ureaplasma infection in BOH patients resulted in preterm delivery (45%) and abortions (35%). These maternal infections with adverse fetal outcome are often initially not apparent or the symptoms are non-specific and are difficult to diagnose on clinical grounds. Hence investigations such as isolation of the microbial agent from the cervicovaginal region and serology are required. These data have a profound impact on the management of women with BOH. *The Indian Journal of Medical Research* 1995; **101**: 103-107.

Timing of withdrawal of dialysis

In a recent prospective study, Cohen et al assessed the quality of dying in 11 patients in whom dialysis was discontinued and found it "good" in 7 and "poor" in 4. These values could be improved by closer liaison with palliative care colleagues. It is important for doctors to recognise when dialysis ceases to be a measure that prolongs life and becomes one that merely prolongs dying. At that point the care providers should help patients and their families to accept the futility of further treatment and make the dying process as painless, peaceful and dignified as possible. *Archives of Internal Medicine* 1995; **155**: 42-47; *The Lancet* 1995; **346**: 3-4

Is dilatation and curettage (D and C) needed for all first trimester spontaneous abortions?

The rationale for D and C as the correct management of first trimester spontaneous abortion was based on reports when parity, general health and the incidence of criminal abortion differed greatly from now. In those times, infection and bleeding were reported against a background of anaemia, multiparity and poor nutrition. Immediate D and C was thought to decrease the duration of convalescence and avoid the need for routine follow up. Because of the widespread use of D and C the natural history of first trimester spontaneous abortions in current populations is not known. In a recent prospective randomised trial 81 out of 103 patients allocated to expectant management (without D and C) had no ultrasound evidence of retained products of conception three days after enrolment in the trial. 19 had retained products and had D and C after three days. The control group had D and C immediately. There was no difference in the short term complications, infection, bleeding, duration of convalescence and the packed cell volume between the two groups. The authors suggest that in a subset of women having first trimester spontaneous abortions a D and C could be avoided without additional short term risk. Further studies are needed to determine the correct management of this condition. *Student BMJ* 1995; **3**: 225

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Vignette

Several months ago I ran into a senior pathologist in private practice. I was surprised to find that he was taking a year's sabbatical in Southwestern Medical School in which he was attending student pathology lectures in the second year as well as every seminar he could find. I asked him why, and his answer was simple: "I found that I would go to a national meeting in pathology and couldn't understand a word that was being said." So he talked his firm into letting him take a sabbatical in order that he might read and understand once again. I saw him two weeks ago after a Medical Grand Round on the role of apoptosis in human disease, and he was beaming. "Wasn't that great ?" he asked. He had his pride back because he was becoming more fluent. *The American Journal of Medicine* 1995; **98**: 217-219. One cannot be medically literate without fluency in the language of science.

Exercise for health

The World Health Organization and the International Federation of Sports Medicine have expressed concern that an estimated half of the world's population is insufficiently active. These organisations urge governments to promote and enhance programmes of physical activity and fitness, as part of public health and social policy, centred on the following:

1. Daily physical activity should be accepted as the cornerstone of a healthy life style. Physical activity should be integrated into the routine of everyday living. Use stairs instead of lifts and walk or cycle for short journeys.

2. Children and adolescents should be provided with facilities and the opportunity to take part in daily programmes of enjoyable exercise so that physical activity may develop into a lifetime habit.

3. Adults should be encouraged to increase habitual activity gradually, aiming to carry out every day at least 30 minutes of physical activity of moderate intensity.

4. Women must be offered a variety of opportunities and more encouragement to engage in healthy exercise.

5. The elderly, including the oldest citizens, whose numbers are increasing all over the world, should be encouraged to lead physically active lives so as to maintain their independence of movement and personal autonomy, to reduce the risk of body injury, and to promote optimum nutrition.

6. People with disabilities or chronic diseases should be provided with advice on exercise and facilities appropriate to their needs.

7. The fact that there are benefits to be gained by starting physical activity at any age should be broadcast more widely. *Bulletin of the World Health Organization* 1995; **73**: 135-136.

Subclinical flavivirus infections in children in an area of Tamil Nadu, where Japanese encephalitis (JE) is endemic

A characteristic feature of epidemiology of JE is the occurrence of a large number of subclinical infections. Reporting of only the overt cases underestimates the total level of virus transmission, data which are essential for planning of control strategy. Investigators from Tamil Nadu have carried out a 3-year prospective serological study in a primary health centre. Seroconversion was studied by looking at changes in the haemagglutination inhibition antibody titres each year in paired specimens before and after the transmission season from a cohort of school children aged 5 to 9 years.

The seroconversion rates in the successive years were 37.5, 42.1 and 25 percentage points, and in a third of such seroconversions it was possible to establish a specific diagnosis. Most seroconversions were due to the JE virus. The average net annual increase of 16.2% in seropositivity was much higher than values reported from other areas of endemicity. The incidence of JE cases was 15 per 100 000 children aged 5 to 9 years, and the estimated ratio of overt:inapparent infections was 1:270. *Bulletin of the World Health Organization* 1995; **73**: 236-244. It will be necessary to undertake similar studies in Sri Lanka in order to get an idea of the total level of virus transmission.

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Picture-story

Inadvertent cannulation of the intercostal vein

Ceylon Medical Journal, 1995; **40** : 122

A patient underwent repair of a sinus venosus atrial septal defect under cardiopulmonary bypass. A 16G, 70cm long venous catheter (Cavafix, B Braun) was passed through the left basilic vein into the right atrium. Postoperative chest xray showed the catheter tip positioned within the right hemithorax with a haemothorax on the same side. The haemothorax was drained.

As the catheter could not be removed with moderate traction we decided to remove it under direct vision. At surgery the catheter was seen to have moved into an intercostal vessel *via* the azygous vein and not into the right atrium. It was also caught in an SVC stitch, accounting for the difficulty in removing it. The catheter was removed after cutting the stitch. Further recovery was uneventful.

We wish to emphasise that:

1. Any form of central venous cannulation is an indication for a confirmatory chest xray as catheters can migrate along unusual routes. Though this is standard teaching, it is rarely followed in practice.

2. If resistance is encountered during removal of a catheter it is best removed under direct vision. The catheter tip may snap off and migrate to surgically inaccessible sites or important structures may be damaged leading to major haemorrhage if excessive force is used.

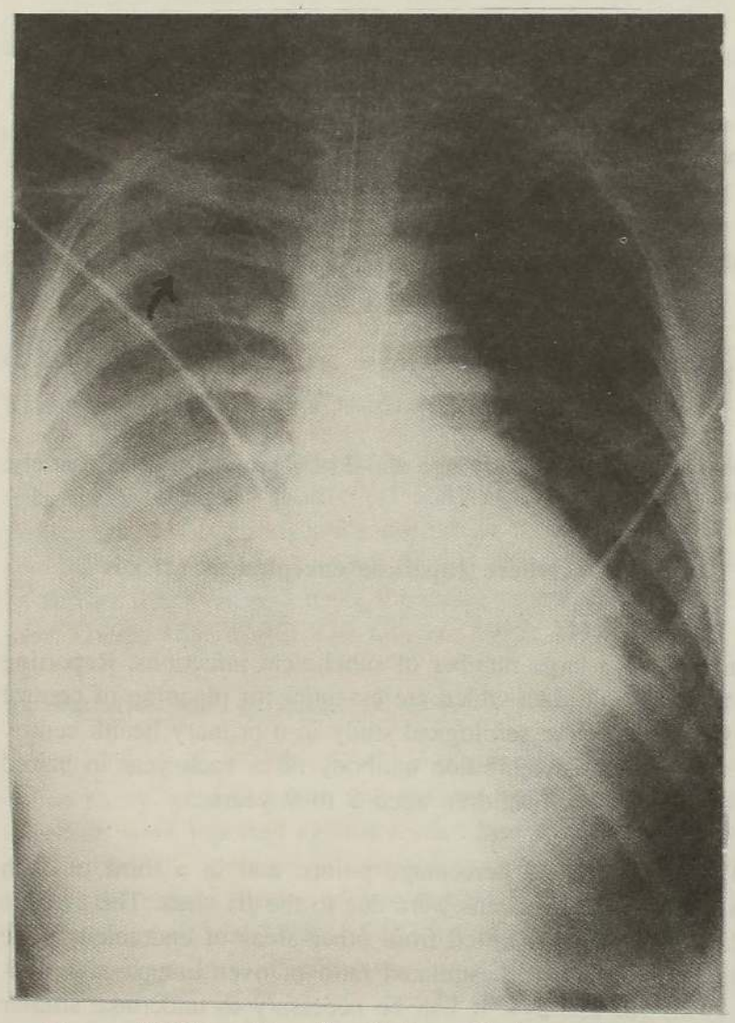

Figure 1.Malpositioned catheter with haemothorasx.

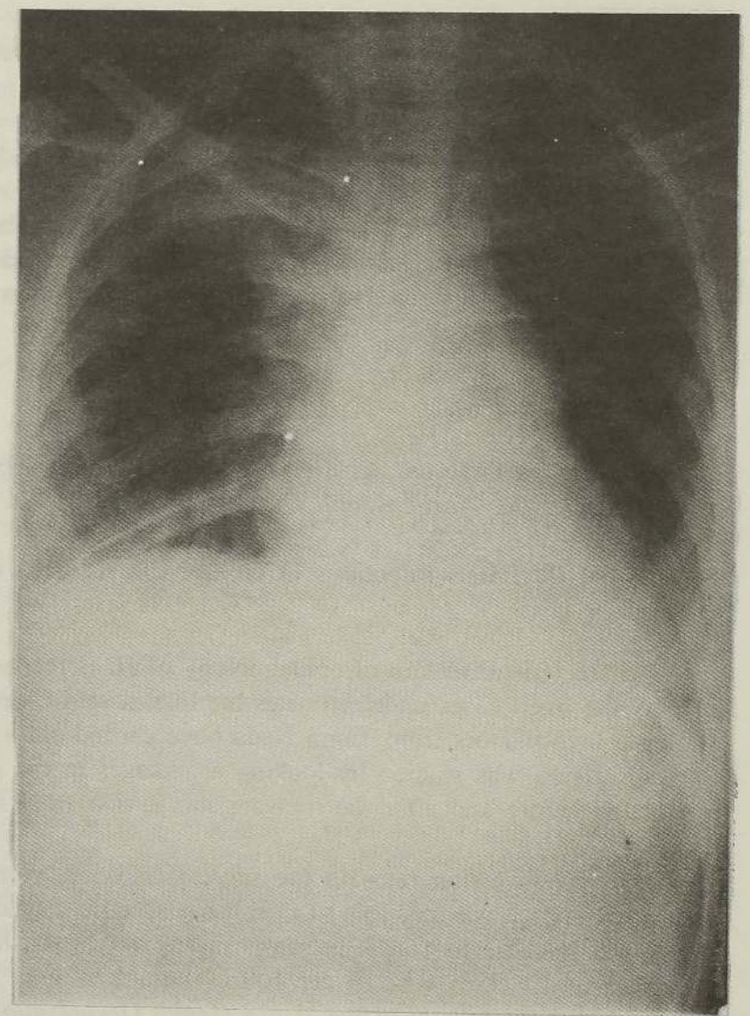

Figure 2. Chest xray after treatment.

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Personal view

The blood revolution initiated by the famous footnote of Karl Landsteiner's 1900 paper

Sachi Sri Kantha[1]

Ceylon Medical Journal, 1995; **40** : 123-125

Abstract

A 1900 publication authored by Karl Landsteiner, at the age of 32 years, contained a footnote which stated that, "the serum of healthy human beings not only agglutinates animal red cells, but also often those of human origin, from other individuals". He followed up this statement in his 1901 paper, and concluded that, "My observations reveal characteristic differences between blood serum and red blood cells of various apparently healthy persons" and that "the reported observations may assist in the explanation of various consequences of therapeutical blood transfusions". These significant observations resulted in the discovery of A, B, O and AB blood groups and later led to successful blood transfusions in humans. The impact of this revolutionary finding by Landsteiner also changed a number of biomedical disciplines such as immunochemistry, medical anthropology, forensic medicine, genetics and pathology.

Introduction

Ninety-five years have passed since the appearance of an unquestionably the most revolutionary footnote which adorned a biomedical publication. The author of this footnote was Karl Landsteiner (1868-1943), the Vienna-born medical doctor, who became the first American (albeit, naturalised American) to receive the Nobel Prize in medicine in 1930.

In this review, I present a review of the "blood revolution", fathered by Landsteiner, primarily based on his own descriptions.

Discovery of blood groups

Table 1 provides a chronological synopsis of Landsteiner's life, spent in three countries; his native Austria (1868-1919), the Netherlands (1919-1922) and the USA (1922-1943). In his only paper published in 1900 which dealt with natural antibodies, Landsteiner wrote in a footnote, "The serum of healthy human beings not only agglutinates animal red cells, but also often those of human ori-

Table 1. A synopsis of Karl Landsteiner's life story

Year	Age	Event
June 14, 1868	---	born to Leopold Landsteiner (a Viennese journalist) and Fanny Hess Landsteiner.
1874	6	lost his father and was subsequently brought up by his mother.
1891	23	graduated in medicine, from the University of Vienna; published his first paper on the influence of diet on the composition of blood ash.
1891-96	23-28	apprenticed at Hantzsch (Zurich), Emil Fischer (Wurzburg) and E. Bamberger (Munich).
1896	28	assistant to Max von Gruber at the Hygiene Institute in Vienna.
1898-1908	30-40	assistant at the department of pathological anatomy, University of Vienna, under A. Weichselbaum.
1908-19	40-51	'prosektor' at the Wilhelminaspital in Vienna; also, held the position of adjunct professor of pathological anatomy at the University of Vienna.
1919-22	51-54	prosektor at a small Roman Catholic hospital in Hague, Netherlands.
1922-43	54-75	researcher at the Rockefeller Institute for Medical Research in New York.
1930	62	awarded the Nobel Prize in medicine for his pioneering discovery of blood groups.
June 26,1943	75	suffered a heart attack, while working in his laboratory and died.

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gin, from other individuals. It remains to be seen whether this appearance is related to inborn differences between individuals or it is the result of some damage of a bacterial kind"(1,2).

That was quite a significant observation, and a prophetic inference. In the very next year, Landsteiner published a short, definitive paper entitled, "On agglutination of normal human blood"(3), describing his pioneering effort on the identification of thereblood groups. He began his classic paper as follows:

"Sometime ago I observed and reported that serum of normal humans frequently agglutinates red blood cells of other healthy individuals. At that time I was under the impression that this ability of the serum to agglutinate foreign red cells was especially pronounced in some diseases and I believed that this agglutinating ability was related to the strong lytic ability of pathologic sera of normal red cells which was observed by Maragliano many years ago"(3).

Following a few comments on the differences between his observations and that of Maragliano's (reported in 1892), Landsteiner wrote, "My observations reveal characteristic differences between blood serum and red blood cells of various apparently healthy persons". After presenting the agglutination results in three simple tables, which represented the experiments conducted in the blood of six men, six puerperal women and six placentae (cord blood), Landsteiner concluded the report stating that, "the reported observations may assist in the explanation of various consequences of therapeutical blood transfusions".

Landsteiner used his blood also in the described agglutination experiments, and it could be inferred from the table of his 1901 paper, that he belonged to the O blood group (4). His junior colleague Alexander Wiener had noted in his reminiscences that, the group O (read as the alphabetical letter, 'Oh') was "originally intended as a zero, meaning neither A nor B" (4). The fourth major blood group AB was first reported by de Castello and Sturli in 1902 (5). Landsteiner was the mentor to Sturli. In 1903, Landsteiner and Richter published a paper suggesting the practical application of grouping dried human blood stains for use in forensic medicine (6).

Contributions to microbiology

For nearly two decades from 1903 to 1922, Landsteiner shifted gears and focussed his attention on microbology. His discoveries during this period include the following (7).

1. elucidation of the pathogenesis of paroxysmal hemoglobinuria (with Donath)
2. introduction of dark field microscopy for diagnosis of syphilis
3. development of complement fixation text for syphilis
4. identifying the viral origin of poliomyelitis
5. cultivation of Rickettsia in tissue cultures (with Nigg)
6. pathogenesis of contact dermatitis
7. theory of hypersensitiveness to drugs
8. the concept of haptens and laying the foundations of immunochemistry
9. clarifying the specificity of plant agglutinins

Landsteiner returned to the studies on blood groups, after becoming a member of the Rockefeller Institute at New York in 1922. He was awarded the Nobel Prize for physiology or medicine in 1930, "in recognition of his discovery of human blood groups".

Nobel lecture and research during post-Nobel award period

Since three decades had lapsed from the publication of his initial report and the Nobel Prize recognition, in his Nobel award lecture, delivered on December 11, 1930, Landsteiner presented in detail, the practical significance of his vital discovery. He observed that,

"there exist characteristic differences [in the relative frequency of the blood groups] in different races... the behaviour of the blood groups, in conjunction with other anthropological features, allows conclusions to be drawn regarding the relationship and origin of human races and is of some importance to anthropological research"(8).

Continuing further, Landsteiner stated that, "more often blood group reactions have been used in forensic medicine for the purpose of establishing paternity... In a survey which appeared last year [1929], Schiff reported that, of 5000 forensic investigations, paternity was excluded in more than 8% of the cases, although the theoretical proportion of cases in which exclusion should be possible is 15%. In favour of the method, it can be mentioned that it has also been instrumental in inducing some fathers to recognise their illegitimate child"(8).

"More important to practical medicine than the subject with which we have just been dealing", stressed Landsteiner, "is the use of the blood group reaction in transfusion... The first blood transfusion in which the agglutinin reaction was taken into account was carried out by

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Ottenberg, but it was only during the emergencies of the Great War [World War I] that the method of transfusion with serological selection of donor was widely adopted - a method which has since remained the normal practice...." After providing statistics on blood transfusions carried out in New York and in Kiel, "without one fatal incident", Landsteiner concluded his Nobel address in an optimistic note; "All in all, the results of blood transfusion are highly satisfactory. In addition we have reason to hope that thorough study of cases with undesirable after effects will help us to confirm suspected causes and perhaps reveal unknown cases, and thus finally virtually eliminate slight risks which transfusion still involves"(8).

Considering that the first trials on transfusion of animal blood to humans were conducted in 1667, and that the first transfusion with human blood was carried out during the first half of the 19th century, it becomes apparent that the transfusion experiments became successful only after the discovery of different blood groups by Landsteiner. Farr (9) has presented a historical survey of the confusions which existed among clinicians related to blood grouping and transfusion practice during the first four decades of this century.

Landsteiner was 62 years old when he received the Nobel Prize. His research endeavours continued for another 13 years. The first edition of his definitive work, *Spezifitaet der Serologischen Reaktionen (The Specificity of Serological Reaction)* was published 1936. At the age of 72, Landsteiner in association with Wiener reported another landmark discovery; "An agglutinable factor in human blood recognized by immune sera for Rhesus blood" (10). This is the now well known 'Rh factor', the absence of which in the mother could be harmful to her foetus. Till his death, after reaching 75 years in June 1943, Landsteiner continued to publish papers on the Rh factor, with titles such as, 'Distribution of the Rh factor in American Indians", "Tests for the Rh factor with guinea pig immune sera" and "Heredity of variants of the Rh type".

Consummate clinician and researcher

In the words of Joseph Goldstein, the 1985 co-Nobelist in medicine, "His (Landsteiner's) medical training was in pathology, and he personally performed 3639 autopsies during the first 10 years of his career—one autopsy a day, seven days per week for 10 years. What's amazing to believe is that his major scientific discovery came in the midst of this enormous clinical load. Landsteiner's curiosity was aroused by the clinical problem of massive hemolysis and generalised tissue destruction that occurred in patients who died after blood transfusions or injections of foreign protein. He wondered whether the serum of sick patients might act on the cells of healthy individuals. This stimulated him to investigate whether red cells agglutination and hemolysis could be detected in a test tube. Fortunately, Landsteiner had a strong background in organic chemistry. He applied his chemical knowledge to the clinical problem of transfusion reactions and the result was the discovery of A, B and O blood groups and the theory of chemical immunity"(11).

Conclusion

The blood revolution initiated by the famous footnote of Landsteiner's 1900 paper changed the face of many biomedical disciplines, such as immunochemistry, medical anthropology, forensic medicine, genetics and pathology. From a practical perspective, successful blood transfusions in humans became routine, and gave life and hope to millions.

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Letters

Sarcoid - like granulomas of the skin seven years after bomb blast injury

Ceylon Medical Journal, 1995; **40** : 126-129

To the Editors:

We describe here sarcoid-like granulomatous skin lesions at sites which were exposed to a bomb blast injury 7 years previously. Clinical examination and investigations have excluded tuberculosis, leprosy and sarcoidosis. The incidence of such granulomata seems to be quite low.

A 29-year old man was seen in the skin clinic, Teaching Hospital Colombo, with painless, non-itchy papular lesions on the left side of the face and neck of two and half months' duration. He had sustained a bomb blast injury mainly on the left side of the face and neck in October 1986, about 7 years before presentation.

He was a well built, well nourished man of average height and weight, with skin-coloured papular lesions of varying sizes on the left side of the face, neck and arm that were non-tender. There were few palpable lymph nodes in the left side of the neck and the left epitrochlear region. There were no other skin lesions or thickened nerves. Eye examination was normal.

His blood counts and urinalysis were normal. ESR was 2 mm in the first hour. Mantoux test, VDRL and Human Immunodeficiency Virus tests were negative. Slit skin smears for acid fast bacilli were negative. Serum calcium and phosphate levels were in the normal range. Serum electrophoresis was normal and the serum IgG level was normal. Chest and skull xrays did not show any abnormality.

Biopsies of one skin lesion and a cervical lymph node were done under local anaesthesia, specimens were stained with heamatoxylin and eosin, and examined under light microscopy. They showed normal epidermis and dermis containing granulomas (Figure 1) composed of epithelioid cells and occasional multinucleated giant cells. The section of the cervical lymph node biopsy showed lymphoid tissue almost completely replaced by multiple discrete granulomas (Figure 2) composed of epithelioid cells and multinuclear giant cells, separated by dermal fibrous tissue. No caseation or foreign material were seen.

We believe that this is a case of sarcoid-like granulomas produced by the introduction into the skin of foreign material during the blast injury that the patient sustained seven years earlier. Tuberculosis and leprosy were excluded by investigations. Sarcoidosis is unlikely because the granulomatous skin lesions were confined only to the parts of the body which were exposed to the blast injury, and there was no evidence of other organ involvement, including eyes. No evidence of polyclonal hypergammalobulinaemia was detected, and chest xray did not show hilar lymphadenopathy.

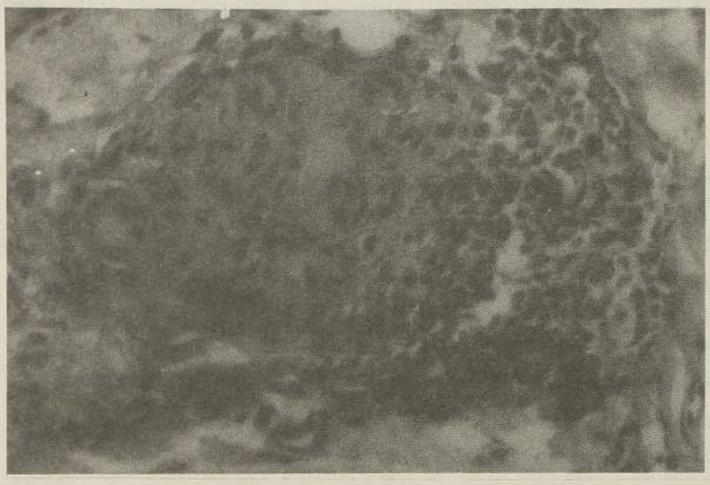

Figure 1 - Granuloma in dermis composed of epithelioid cells and giant cells and (CHE, x 400)

Figure 2- Cervical lymph mode showing multiple granulomas and (H A E, x 100)

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In 1977, Pimentel from Portugal reported two cases of such granulomas produced by arcylic and nylon fibres (1). Before that there have been reports of granulomas due to silica, talcum, beryllium, sulphonamides, zirconium, wheat-stubble and cactus pricks by various authors(1).

In 1977 Weiss and co-workers, described seven cases of unusual foreign body reactions to silica (quartz) resembling fibrous histiocytoma and in five instances were associated with a history of injection of a sclerosing agent for the repair of a hernia at the same site 10 to 14 years previously (2). This long delay in appearance of lesions after exposure which we also have observed in our case was a striking feature.

In 1991, Ramesh from India reported a case of foreign body granuloma on the forehead as a reaction to bindi (dot applied on the centre of the forehead by Indian women)(3), with histology similar to that of our case.

Development of sarcoid-like granuloma due to foreign material seems to require an 'individual factor' probably of an immunological nature. An attempt to explain the formation of granulomas in the skin and other areas of the body has been based on changes in hypersensitivity mechanisms of type IV and possibly type III(1).

Inquiry into the history of exposure to a foreign body many years previously and correlating the site of exposure with the lesions is an important aspect in the diagnosis of cutaneous granulomatous lesions.

Acknowledgement

We are grateful to Dr C Uragoda who encouraged us to write this paper, and the staff of the skin unit, General Hospital Colombo and the University pathology department for their assistance.

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Prevention of AIDS in Sri Lanka : are we doing the best for our people?

To the Editors:

I wish to communicate with you regarding a leading article, in your esteemed Journal (CMJ 1995; **40**: 5-7).

The esteemed author has only quoted authorities on the 'Cuban success', yet he has chosen to comment on the lethargy of the Sri Lankan authorities in general and presumably on the STD/AIDS Control Programme, without any reference to unpublished communications, specially regarding the type of patients who attend the STD clinics, and the methodology adopted to carry out sentinel surveillance.

I would also like to respond to the comment that mandatory testing should be the method for high risk groups. I wish to clarify that we are dealing with persons practising high risk behaviour rather than specific population groups. Thus, if we adopt that high risk behaviour is the criterion for testing, then practically all sexually active persons in this country (about 60%) would have to be tested.

The nature of the HIV diagnostic kit is not specified in the article. The only test available in this country is the antibody test where a 'window period' of six months is known. This means that these tests may give false negative results that may severely jeopardise the effectiveness of a screening programme especially in a low prevalence country like Sri Lanka.

The recommendations for HIV control suggested by the author have already been scrutinised by relevant authorities. Licensing brothels has been tried in many countries. In Sri Lanka, like in many other Third World countries, institutionalising commercial sex has not succeeded due to prevailing social and legal norms. In the recently concluded legal and ethics workshop conducted by Community Front for Prevention of AIDS where many eminent legal and medical persons including the author participated, this

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issue was discussed at length, and the conclusion was that risky sexual behaviour was not confined to sex workers alone. By trying to target these people and confining them, we would not only create a sense of complacency but also drive the sex workers underground beyond reach of the control programme.

Finally, countries which recorded very low prevalence of STDs when following a particular policy of government had reported a sudden rise in STD/HIV prevalence when certain policies which were socially restrictive were relaxed. The People's Republic of China is a good example, as was communicated by the STD/AIDS Control Programme Managers at an inter-country meeting for HIV/AIDS Control Programme Administrators held in Tokyo, Japan in March 1995.

So in this context it would be interesting to note the changes in the Cuban scene in the light of changes in their philosophies regarding government as far as STD/HIV prevalence is concerned.

T Arulanantham, *Acting Director, STD/AIDS Control Programme, 7 Palmyrah Mawatha, Colombo 3.*

Need for change in female sterilisation procedure and selection

To the Editors:

Voluntary female sterilisation is the world's most widely used family planning method and one of the fastest growing. About one quarter of married women of reproductive age (40% of women using contraception) in Sri Lanka have chosen this procedure(1).

It has been estimated that of the women who have been sterilised, up to 10% later regret their decision. Among Sri Lankan women who undergo sterilisation, at least 14% come to regret it (3). The number of patients requesting reversal of sterilisation for various reasons is between 0.1 and 10% (4). Some of these reasons could have been predicted at the time of sterilisation, had proper counselling been available.

A 30-year old woman with two children requested reversal of sterilisation. She had two normal vaginal deliveries at 19 and 20 years of age. At the age of 21 years she underwent surgical sterilisation. At that time she was not briefed about the procedure, nor was she aware that it was permanent. Sadly, the children died within two years of sterilisation.

At laparotomy we found that large portions of the tubes had been resected, leaving very short proximal and distal segments. Bilateral ampulo-isthmic tubal anastomosis was done, but the total length of each tube following the anastomosis was below 3 cm. The patient did not return to us with a pregnancy up to six months after the operation.

This patient had undergone sterilisation at 21 years without knowing at least that the procedure was permanent. She had no counselling about contraception or any inquiry about the size and the financial situation of the family, or the stability of the marriage.

The other aspect of the problem is the short length of the rejected tubes that makes reversal procedure difficult. Silber and Cohen found that the final tube length to be important in reversal success (5). In that series, 4 cm was considered the minimal length of the tube for success. With regard to the site of sterilisation, Winston achieved his highest pregnancy rate (75%) following reversal with isthmus-isthmus anastomoses. His lowest success (42%) was in the ampulla-ampulla group (6).

Therefore it is pertinent to consider counselling procedure, and to advise the sterilisation providers to adhere to a common protocol so that high risk couples are identified. Thereafter the operator should perform the procedure in a manner that will facilitate reversal if necessary.

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Remedy for dilution errors in ESR

To the Editors:

A common complaint made by clinicians is that erythrocyte sedimentation rate (ESR) results are not reproducible, particularly when they are used to assess progress and response to therapy in chronic disorders. ESR being a simple test needs little technical expertise. It is not influenced by meals or by a circadiam rhythm (1). Using the Westergren method (2), if the tubes are kept vertical (1) and away from direct sunlight (3) the results should be reproducible. However non-reproducibility will occur because of errors in dilution (4).

The dilution errors are due to inherent faults in the method of sample collection. Sodium citrate is used as the anticoagulant and the diluent. The usual practice is to collect blood directly into 3.8% citrate solution by withdrawing 1.6 ml (4 volumes) of blood into a syringe containing 0.4 ml (1 volume) of citrate. However, as it is difficult to withdraw an exact amount of blood into a syringe already containing a solution, under- or over-dilution invariably occurs. The alternate method of adding the required amount of blood into a bottle containing the citrate solution also has its drawbacks because it is difficult to deliver an exact amount of blood from a syringe.

ESR measurements can be carried out equally well with blood anticoagulated with sequestrine (EDTA) (5). It should be diluted immediately before the test is performed, using 3.8% sodium citrate or saline (5). It has been found that the ESR of sequestrine blood, appropriately diluted, is the same as that of blood citrated as for the orthodox Westergren technique (6, 7). As ESR will be reduced in stored blood, the test should be carried out within two hours of collection, although a delay up to six hours is permissible provided that the blood is kept at 4°C (5).

The method using sequestrine involves collecting about 2 ml of blood into a sample bottle containing sequestrine anticoagulant (similar to collecting blood for Hb or WBC measurements), and sending it to the laboratory labelled "sequestrine sample for ESR". In the laboratory dilutions are made by a technician using four volumes of this blood and one volume of 0.9% sodium chloride before setting up the ESR. The dilutions could be made accurately as it is done in an unhurried manner, using graduated pipettes by a person trained in pipetting.

This method minimises dilution errors and is particularly useful when a higher degree of accuracy is required as in serial ESR measurements.

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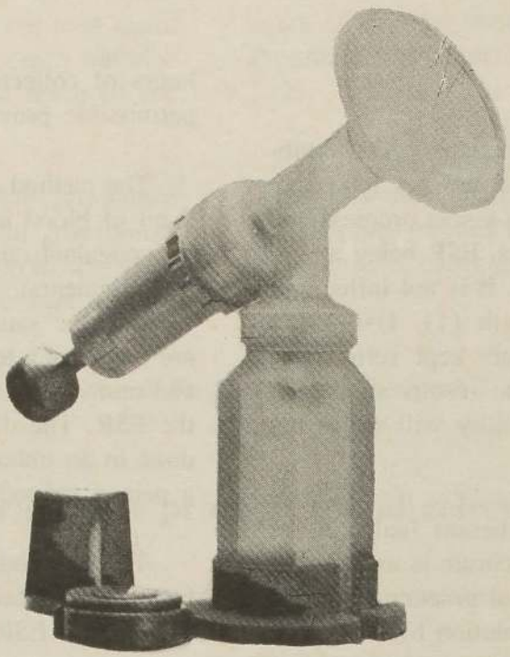

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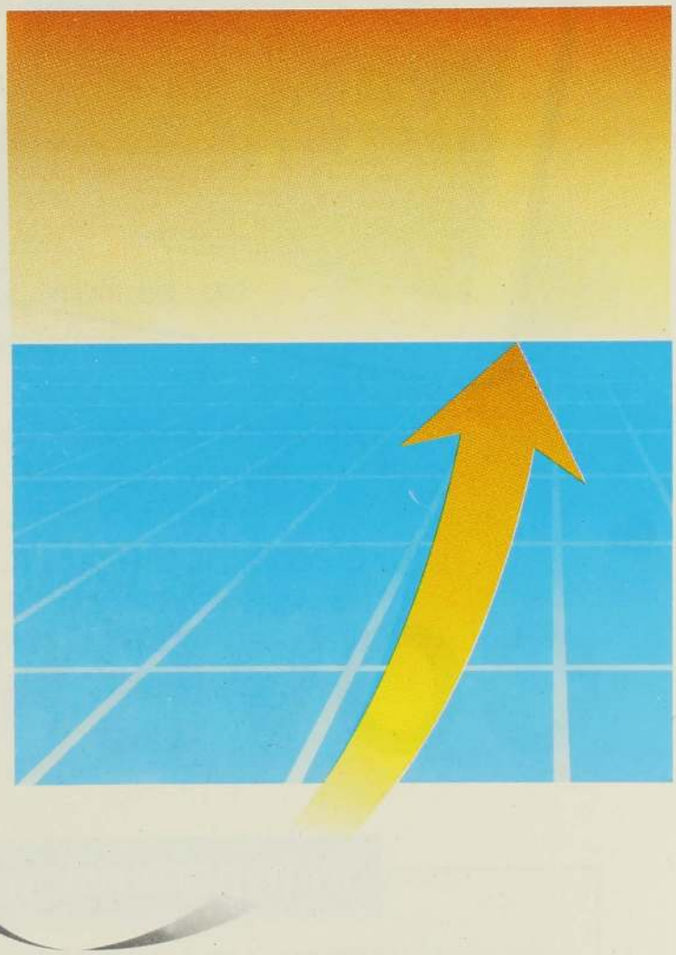

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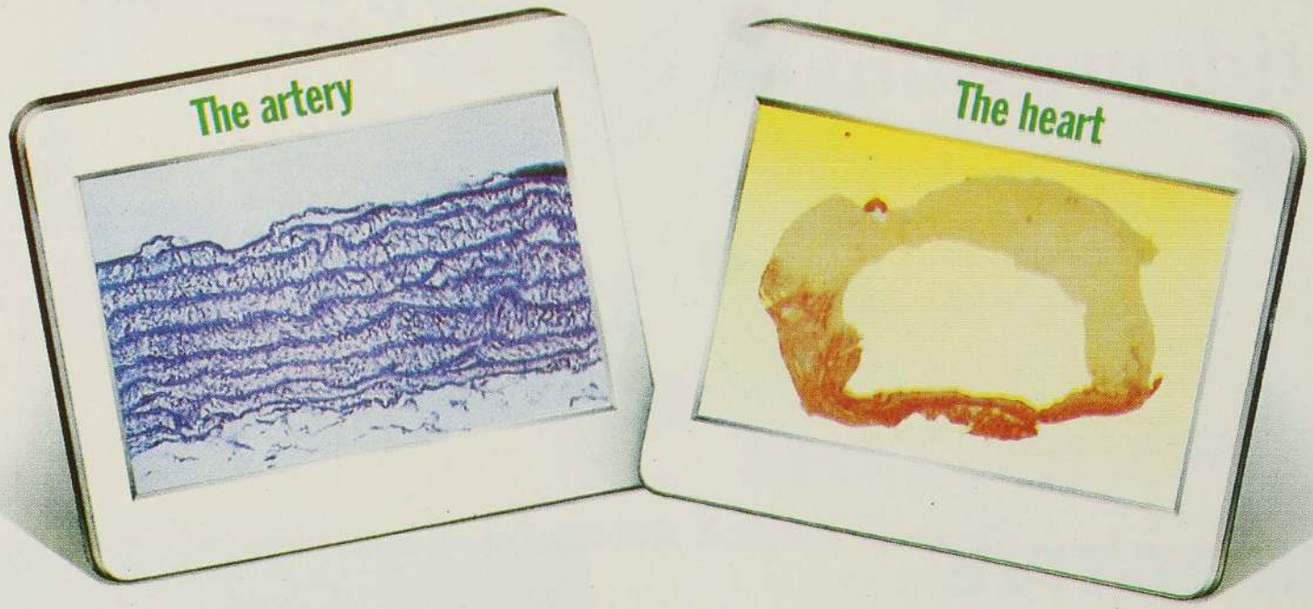

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Coversyl is a long-action ACE inhibitor. **International nonproprietary name**: Perindopril. **Indications**: Essential hypertension. Congestive heart failure (adjunctive therapy). **Dosage and administration**: *Hypertension*: 4 mg in the morning. If necessary, the dose may be increased to 8 mg after one month of treatment. Coversyl should be taken before food. *Congestive heart failure*: Coversyl should be started under close medical supervision at a starting dose of 2 mg in the morning. This may be increased to 4 mg once blood pressure acceptability has been demonstrated. *Elderly patients*: start treatment at 2 mg daily. **Contraindications**: Children. Pregnancy. Lactation. Patients with a history of hypersensitivity to Coversyl. **Precautions**: Assess renal function before and during treatment where appropriate. Renovascular hypertension. Surgery/Anesthesia. Renal insufficiency: the dose should be cautiously adjusted in accordance with the creatinie clearance (*refer to complete data sheet*). Symptomatic hypotension is rarely seen, but is more likely in volume-depleted patients, those receiving diuretics, or with the first two doses. In diuretic-treated patients, stop the diuretic 3 days before starting Coversyl. A diuretic may later be given in combination if necessary; potassium-sparing diuretics are not recommended. Combination with neuroleptics or imipramine-type drugs may increase the hypotensive effect. Serum lithium concentrations may arise during lithium therapy. **Side effects**: Rare and mild, usually at the start of treatment. Cough, fatigue, asthenia, headache, disturbances of mood and/or sleep have been reported. Less often, taste impairment, epigastric discomfort, nausea, abdominal pain, and rash. Reversible increases in blood urea and creatinine may be observed. Proteinuria has occurred in some patients. Rarely, angioneurotic edema and decreases in hemoglobin, red cells and platelets have been reported. **Composition**: Each tablet contains 4 mg of the tert-butylamine salt of perindopril. **Presentation**: Packs of 30 tablets of Coversyl 4 mg (scored). *Refer to data sheet for complete prescribing information.*

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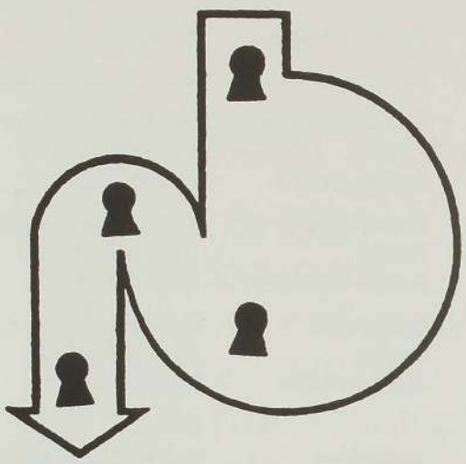

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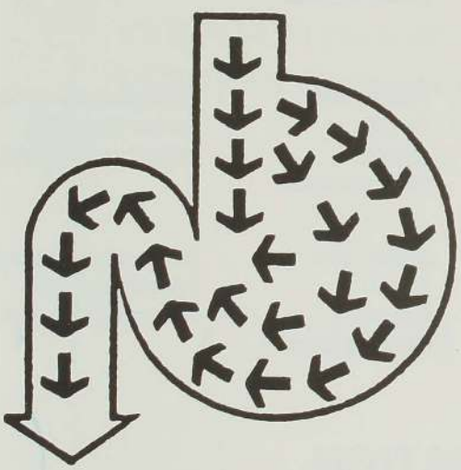

In clinical practice Costi (Domperidone) antagonises dopamine-induced gastric relaxation, restores gastric motility, regulates gastric emptying, alleviates the symptoms of postprandial gastro-intestinal distress or chronic postprandial dispepsia controls nausea and vomiting such as those associated with the administration of moderately emetic cytotoxic drugs and icreases the optimal dose of the said drugs.

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- **Acid regurgitation**
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Summary of clinical trials enlightening the efficacy of Costi (Domperidone) in alleviating symptoms of gastric discomfort and postprandial dyspepsia

Investigator (Year)	Diagnosis (No of patients)	Dose (Duration)	Study design	Results
Bekthi et al (1979)	Functional dyspepsia (40)	10mg tid before meals (4 weeks)	Double blind Parallel Against placebo	Excellent/good results: Domperidone: 65% Pacebo: 20%
Chey et al (1982)	Functional dyspepsia (20)	20-30mg tid before meals and at night	Double blind Parallel Against placebo	Excellent/good results: Domperidone: 90% Pacebo: 10%
Milo (1980)	Functional dyspepsia (66)	10mg tid before meals and at night (4 weeks)	Double blind Parallel Against placebo	Excellent/good results: Domperidone: 79% Pacebo: 34%
De Loose (1979)	Hiatus hermia, Gallbladder hypotonia, cholelithiasis, spastic colitis, oesophagitis (67)	10mg tid before meals and at night (2 weeks)	Double blind Cross over Against placebo and metoclopramide	Excellent/good results: Domperidone: 91% Metoclopramide: 74%
Moriga (1981)	Acute gastritis, Chronic gastritis, Nervous gastritis, Irritable colon (484)	10mg tid before meals (2 weeks)	Double blind Parallel Against metoclopramide	Excellent/good results: Domperidone: 69% Metoclopramide: 58%
O'Shea (1980)	Gastritis, Irritable bowel syndrome (40)	20mg tid before meals (4 weeks)	Double blind Parallel Against metoclopramide	Excellent/good results: Domperidone: 50% Metoclopramide: 50%

AVAILABILITY

Costi is available in tablets containing 10mg Domperidone in packs of 50, 100, 250 and 1000 tablets.
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