MEDICINE IN NEPAL

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Introduction

BRITISH Military Hospital (B.M.H.) Dharan was established some 12 years ago to serve the needs of Gurkha and British personnel and their families serving in the British Gurkha Line of Communication, and of disability pensioners. While still fulfilling this role, it has come over the years to be the most important hospital in Eastern Nepal by virtue of the standards of medical and nursing care it can provide. Nepal is still a very poor and under doctored country with few hospitals and difficult communications. Life is tough, and often short—55 per cent of all deaths occur in children under 5 years of age (Worth and Shah 1969). The B.M.H. Dharan has for many years provided a high level of surgical care to all-comers from Eastern Nepal, dramatically described by Pitt (1970). A full-time physician was not appointed to B.M.H. Dharan until 1971, and the first occupant of the post describes some of his experiences.

The captain of the men of death

Tuberculosis, although in the true sense an exotic, or imported, disease in Nepal is the major cause of illness and death, and a low native resistance is aggravated by primitive overcrowded housing. Every type of pulmonary, lymphatic and skeletal infection is widespread, and the sallow wasted coughing patient is the commonplace of the villager's clinic. Tuberculous meningitis is less common but must be the first diagnosis considered in any older child complaining of persistent headache and fever. One 11 year old girl with such a history for 4 weeks and a slightly stiff neck only yielded *M. tuberculosis* from her c.s.f. at the third attempt. The most advanced case seen was of a 4 month old baby with a 6 week history of fever. He was generally spastic with gross neck retraction and a bulging anterior fontanelle. His c.s.f. was green with protein (2500 mg/100 ml) and contained 150 lymphocytes per mm³ and abundant bacilli which stained brilliantly with Ziehl-Neelsen stain and heavily and positively with Gram's stain. It seemed that life in the c.s.f. had so altered *M. tuberculosis* that it was able to take up Gram's stain, since the culture for the only other Gram-positive bacillus known to cause meningitis, *Listeria monocytogenes*, proved negative. Despite triple therapy and intrathecal streptomycin and steroids, this baby died six days after admission.

The more usual presentation of tuberculosis in children is of lymphatic disease; scrofula, tuberculous "necklaces" and ill children with worried faces, match-stick limbs, rattly coughs and ascites become all too familiar sights. These children lose their fever and regain their smiles and appetites so much more quickly with steroids added to their triple therapy that the discriminate use for 4 to 6 weeks is very worthwhile. Intestinal obstruction can thus be avoided, and the only case of perforation of a tuberculous Peyer's patch seen was in a child who had not been given steroids. All the really ill children with tuberculosis are likely to be Heaf-negative at presentation and steroid treatment may also delay their conversion. One toxic 8 year old boy with an extensive

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"snowstorm" of tuberculous bronchopneumonia and leukaemoid blood picture (60,000 lymphocytes per mm³) was running about dragging a toy jeep on the sixth day of triple therapy with steroids.

More unusual presentations of tuberculosis included a tuberculous fistula-in-ano, adenoiditis, various psoas abscesses, a Horner's syndrome in adult with a single hard neck gland, erythema nodosum, two cases of serous pericarditis and an emaciated youth who gave a story of being unable to swallow since falling out of a tree a week before. He had an enormous posterior pharyngeal abscess and a mouthful of Gastrografin was seen on fluoroscopy to diffuse into his upper mediastinum like the Ganges delta and then be coughed up again through his nose. With a gastrostomy and triple therapy he made a full recovery. Constrictive pericarditis and Addison's disease from adrenal destruction were, rather surprisingly, not seen.

The policy with the more usual post-primary respiratory tuberculosis is to treat this on an out-patient basis, with the patient attending daily for streptomycin injections and being provided with para-aminosalicylic acid (PAS) and isonicotinic acid hydrazide (INAH) for one month. At the end of this time each case is reviewed; if attendance has been regular and PAS has produced no vomiting, and the patient can afford to stay locally for a further three months, he is taken on the Tuberculosis Clinic register and given a solemn warning about the regularity of treatment and 3 monthly attendance for X-ray, sputum test and review. Up to 350 patients at a time are on this programme and, apart from a few who are seen once or twice but never again, surprisingly few default from a full 2 year course of treatment. Very occasionally a patient is "struck off" because of persistent treatment failure, established by early relapse after a good initial response, and negative urine tests for PAS despite warnings, but many patients walk over the hills for up to a week to have their drug tins refilled. Complicated cases can be admitted to the TB wards, but only if they are male, as the 9 female beds are shared between surgeon, gynaecologist and physician, and no sort of isolation is possible. There is a small band of Gurkha pensioners who have been admitted and discharged repeatedly over the years with relapses, often as a result of treatment failure in the past. Other occupants of the TB wards are the ill and toxic, those with primary drug resistance, or drug resistance acquired from intermittent *ad hoc* purchase of streptomycin in the bazaars, and cases of repeated haemoptysis or pyopneumothorax. Recurrent haemoptysis in those with sensitive disease seems often to be due to fungal infection of tuberculosis cavities as mycelia can be found in the sputum. It may be tempting to suggest open surgical drainage of tuberculosis pyopneumothorax but experience showed that this was likely to lead to a persistent sinus, and that repeated closed needle aspiration with triple therapy was likely to be effective.

Drug toxicity is an important problem and a number of unpleasant exfoliative rashes from streptomycin were seen. Unfortunately the severe cases, who need steroids, are likely to acquire coecal infections to add to their problems. One very unusual case of liver failure apparently due to streptomycin, proved fatal, although experience with other cases suggested a general hypersensitivity state which could be aggravated by all the standard drugs used singly in small doses but which would eventually settle down and allow full doses of these drugs to be given subsequently. PAS dyspepsia is common but usually surmountable and INAH neuropathy, presenting as "burning hands and feet", responds to pyridoxine. Drug resistance had, up to now, led to the

use of thiacetazone or ethionamide in combination since, apart from the cost, it has been thought unwise to introduce the newer drugs, and thus, almost inevitably in the prevailing conditions, produce new multiresistant strains of *M. tuberculosis*. The only solution to this enormous problem is prevention and the British-Nepal Medical Trust, based 30 miles away at Biratnagar, aims to devote much of its resources to a programme of universal B.C.G. vaccination of children in all the villages and hill-farms of Eastern Nepal, a huge task which they have gone a long way towards completing.

Old fashioned bacteria

Leprosy, tetanus, diphtheria, typhoid, shigellosis, cholera, brucellosis—the list of other important bacterial diseases is a long one. Leprosy is common in Nepal and Dr. J. C. Pedley, who works at Tansen in West Nepal, estimates an overall incidence of 2 per cent of the population. His findings (Pedley 1967, 1968a, 1968b) of *M. leprae* in breast milk, and more recently, in placenta, provides fascinating speculation on the unsolved problem of the transmission of leprosy. All types of cases from early lepromatous to advanced tuberculoid are seen in the villager's clinic at Dharan, but almost all are cheerful regular attenders for their supplies of Dapsone. Isolated radial or ulnar palsies are common, and one patient was seen with a complaint of "burning all over" before the changes of lepromatous leprosy became obvious. Neonatal tetanus is the main cause of death in the second week of life and usually presents as a dirty jaundiced baby with an infected umbilicus who has stopped sucking. Many of these babies die in their spasms despite antitoxin, chlorpromazine, diazepam, paraldehyde, betamethasone and penicillin, and those that survive (about 50 per cent) may have a refractory neuromuscular excitability for several weeks, often with neck retraction. Diphtheria is also common and the lesson about early tracheostomy is soon learned. Antitoxin and penicillin produce rapid resolution of the membrane, but two small babies who seemed to be over the worst died unexpectedly from gastric haemorrhage, presumably from "stress" ulcers.

Acute diarrhoea producing a dehydrated comatose patient is bound to produce fears of cholera, and indeed a small post-monsoon epidemic did occur in the area, but in four such cases no vibrios could be found and after they had recovered rapidly with intravenous fluids their stools grew various cocktails of *Shigella*, *Pseudomonas*, and *E. Coli*, and they were discharged well without antibiotic treatment and the mystery unsolved. It is difficult to believe that the teeming flagellates in the stools of some small children with severe diarrhoea are not pathogenic, but these cases also respond to simple rehydration unless there is also severe protein deficiency, although the diarrhoea which follows measles can be particularly troublesome. One case of brucellosis was seen in a 6 year old boy who had a striking diurnal swing between complete well-being and misery with severe muscle pains and a temperature of 105°F; he required 6 weeks of treatment with tetracycline and prednisone before this was controlled. Clinical typhoid fever was very rarely seen although many of those admitted with other diseases were found to produce anamnestic antibody of up to 1 in 120 to typhoid 'O' antigen.

Ova cysts and parasites

The ubiquitous ancylostome is responsible for most cases of dyspepsia not caused by "raksi", the local spirit, or chillies. Severe anaemia does not commonly result and

in women is usually precipitated by a pregnancy. It soon becomes clear that absence of blood eosinophilia is compatible with heavy hookworm infestation. Several interesting men with hookworm and severe megaloblastic aenemia (Hb under 20 per cent) were seen. Grossly inadequate diets, usually for economic reasons, were often implicated, and one case was in a young man who for reasons of Hindu caste was a complete vegan. Mehta, Rege and Satoskar (1964), in a study of such men, found low levels of serum vitamin B12 compatible with complete health unless a sprue syndrome supervened. In the Dharan cases xylose absorption and the radiological pattern of the small bowel were normal and free acid was present in the stomach, but it was not possible to take jejunal biopsies. All responded to bethovenium, iron and folic acid, and the vegan was persuaded to eat eggs. Ascariasis is also widespread and a child seriously ill with something else may cause further alarm by vomiting several large round worms and possibly pass up to fifty *per rectum* when given piperazine. Malaria has fortunately been almost completely eradicated from Nepal and Kala-azar is rare, but *Entamoeba histolytica* flourishes. Acute intestinal amoebiasis is less commonly seen than liver abscess, and the hectic wasted appearance of these patients may at first suggest tuberculosis. The total white blood count is usually normal, contrary to textbook teaching, but the serum alkaline phosphatase normally raised. Ramachandaran, Jayawardena and Perumal (1971) found an abnormal chest X-ray in 88 per cent cases if PA and right lateral views are taken, but it was found that the use of the fluoroscope showed abnormal diaphragmatic movement in all the cases treated in hospital. Metronidazole was tried and found wanting, even in high doses, and subcutaneous emetine with oral chloroquine regarded as the only certain treatment.

The have—not diseases

Protein—calorie malnutrition is the main cause of death in Nepalese children aged 1 to 4 years, who suffer a mortality of 40 per 1000 per annum (Worth and Shah 1969), and kwashiorkor is especially seen in the monsoon when *dhal*, made from legumes, and the staple protein source, is in short supply. Many families can afford meat only once or twice a month, and to this is added the belief that when a child becomes oedematous his blood is hot and meat and eggs are bad for him. Treatment of severe kwashiorkor in the ward includes thiamine, folic acid, something to stop the diarrhoea, an attempt to balance oedema and a depleted circulation, and Hyderabad mixture, a high protein high-calorie combination of wheat flour, sugar, skim milk and ground peanut. Infantile marasmus stems usually from more personal tragedies such as a tuberculous or psychotic mother and it is not easy to forget cases like the 5-month old sixteenth child weighing 5 pounds admitted from villager's clinic and transformed into a gurgling fat 11-pounder whose mother reappeared with him in the clinic queue 3 weeks after discharge and who by the time she reached the head of the queue was a wasted warm corpse. Ignorance and superstition play their part and mothers have to be persuaded to give their children more milk, nuts and *dhal* if they cannot afford meat and eggs. Vitamin A deficiency in its ocular and skin manifestations is common, but beri-beri, pellagra and rickets are fortunately rare. Goitre is still common in the hill people but becoming less so as Indian salt replaces the iodine-deficient Tibetan product, but the fact that the iodine intake is still marginal is reflected in the number of goitres which increase in size on PAS treatment.

'Western' problems

The more prosperous classes in Nepal have their fair share of gout, hypertension and occlusive vascular disease, although chronic glomerulonephritis is the commonest cause of high blood pressure. Many cases of nephrotic syndrome are seen in older children, but few of streptococcal tonsillitis, and it is likely that the streptococci which commonly cause impetigo are nephritogenic. Skin organisms are however, not said to cause rheumatic carditis, although the effects of this are seen in moderate numbers. Advanced mitral valve disease can be seen in 10 or 12 year old children and few such girls survive to present problems in pregnancy. Aortic valve disease is uncommon, and this also appears to reflect the rarity of the late effects of syphilis, although it has recently been suggested (R. N. T. Thin, personal communication) that endemic syphilis is more common in Nepal than was previously thought. Neurosyphilis is certainly rare on the basis of many negative serum Venereal Disease Reference Laboratory (V.D.R.L.) reactions in a wide variety of neurological conditions, although two possible cases were seen. The mother of a 2 month old baby with hemiparesis gave a history of two previous still-births and two miscarriages. The V.D.R.L. tests on the blood of both parents and the baby were all positive but they disappeared to the hills after one injection of penicillin. A man with motor neurone disease and positive V.D.R.L. also disappeared before a diagnosis of syphilitic amyotrophy could be confirmed.

Congestive cardiac failure is common and usually due to chronic lung disease, especially in the women whose consumption of tobacco greatly exceeds that of the men, and alcoholic cirrhosis of the liver is fairly common in both sexes. Diabetes is fortunately unusual and the only case of diabetic coma seen was due to fulminating pancreatitis. Few prescriptions for diazepam are needed in Nepal, although syndromes such as left submammary pain in the young male college student and protean bodily burning and a lump which move about the abdomen in the infertile hill women became familiar. Nor can one escape from drug side effects as a fatal phenylbutazone-induced thrombocytopaemia made all too plain.

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