

and infectious diarrhoea; the treatment of paediatric illness; if possible, the initiation or resumption of immunization procedures; and the supervision of basic sanitary arrangements.

Under tropical conditions, particularly where humidity is high, the protection of food from thieves and from destruction by weevils, rats, and moisture often presents great practical difficulty. Its solution will depend on local facilities. Whenever possible use should be made of proved methods evolved by the local population. Uncountable tins of skim-dried milk have rusted to uselessness in the past. Uncountable plastic containers have been penetrated by insects and other pests and their contents rendered useless.

The relief of starvation is relatively simple. As balanced a diet as possible should be given, the main ingredients being skim-dried milk: 300 ml. for a 2-kg. child, 500 ml. for a 4-kg. child, 1,000 ml. for an 8-kg. child, and so on, per 24 hours. It should be noted that weighing-machines for both children and food must be available, as must be hand-operated milk whisks. Carbohydrates (sugar, bananas, sweet potato) and fat (cottonseed or palm oil) are added so that the proportion of milk to carbohydrate to fat is roughly 4 g.: 20 g.: 3 g. per kg. body weight per day. The aim should be to give a minimum total calorie intake of 130 calories per kg. body weight per day. Whenever possible a vitamin supplement should be added. The exact proportion and indeed the constituents of the diet advocated have varied from place to place and from time to time, but since the starving child, unlike the child with kwashiorkor, is not "ill" the treatment is greatly simplified.

Opinions on the best way to treat protein-calorie malnutrition vary considerably. The basic treatment requires protein, carbohydrate, and fat, again with a total calorie intake of 100–150 calories per kg. body weight per day. Because of the frequently associated electrolyte upset, potassium, magnesium, and often sodium will have to be added. Alactasia (absence of lactase) may call for the substitution of fructose if the stools are acid ($\text{pH} < 6$) and contain more than 0.5% reducing substance. Hypoglycaemia and hypothermia are common, and a Dextrostix reading of under 40 mg. per 100 ml., if associated with coma or fits, requires 10% intravenous or 50% intragastric glucose and prednisolone by mouth or parenterally. Hypothermia may occur and exacerbate the dangers of hypoglycaemia, so that low-reading thermometers must be available. Most children with moderate or severe kwashiorkor refuse their food, so that supplies of 50-cm.-long nylon naso-gastric tubes, with bores of 1.0–1.5 mm., are part of the basic equipment. Transnasal feeding of large numbers of children may be required for several days and calls for continuous nursing-auxiliary supervision.

These children usually suffer from nonspecific diarrhoea during the first few days of treatment, presumably the result of a malabsorption state. The intravenous correction of water and electrolyte balance is dangerous without skilled supervision, but fluids containing 4–5 mEq/per kg. body weight per 24 hours may safely be given by mouth. If bacterial enteritis is suspected or proved, water and electrolyte repletion should take precedence over antibiotic treatment.

Surprisingly, tropical diseases, with the exception of malaria—which is pandemic in West Africa—are not very troublesome. In order of frequency, the following conditions account for most admissions to hospital: pneumonia, the dysenteries, measles (a killer), whooping-cough (a frequent killer), malnutrition, jaundice (due to sepsis, sickle-cell disease or G.6P.D. deficiency), tuberculosis, tetanus, and haemophilus

meningitis. Whenever possible, the paediatric team should start or restart immunization programmes. B.C.G. is best given at birth, while during the next nine months the baby should be vaccinated against smallpox, measles, and poliomyelitis and receive triple antigen in that order. Paraffin-powered refrigerators are essential.

Lastly, the team's needs. The staff will find ampicillin indispensable. They should take pyrimethamine once a week, use dimethylphthalate against mosquitoes, wear cotton pants and trousers, open-necked cotton shirts, plimsols for indoors, chukka boots for mud, and have a plastic mackintosh handy. The colour of clothes for civilian medical teams under war conditions is important: white, off-white, or light blue; never khaki.

Detecting Renal Hypertension

The great majority of patients with arterial hypertension have no apparent precipitating cause for it. For want of a better term we still call this condition "essential" hypertension. Of the minority in whom an apparent cause for the hypertension is found, bilateral disease of the kidneys is much the commonest reported.¹

Much attention has centred on the small number of hypertensive patients with unilateral renal disease because of the possibility that an operation on the affected kidney might relieve the hypertension permanently. Now at page 764 of this issue of the *B.M.J.* Dr. R. G. Luke and his colleagues review their extensive experience of patients with hypertension in whom parenchymal disease of one kidney was found. This paper complements their recent article² on their group of patients in whom renal-artery stenosis was diagnosed. Altogether the two papers give a review of 143 patients with disease of one kidney. Forty-one had renal-artery stenosis and 102 had other disorders; most of these were pyelonephritis, but others were renal tuberculosis, hypoplasia, and adenocarcinoma.³ Both papers indicate, along with other results which they summarize, that complete relief of hypertension can be obtained in a fair proportion of patients treated surgically—58% of those with renal-artery stenosis and 38% of those with other unilateral renal disease. An even larger proportion received considerable benefit. These results were attained only by careful investigation and selection of patients for surgery, and of the 143 patients investigated only 27 with renal-artery stenosis and 34 with parenchymal renal disease were operated on.

These findings present general physicians and general practitioners with a problem. In an unselected series of patients with hypertension how common is unilateral renal disease which may be cured by operation? What investigations should be carried out as a routine on all hypertensive patients so that unilateral renal disease may not be overlooked? And, if some indication of unilateral disease is found, how can its role in producing and maintaining the hypertension be assessed?

No absolute answer can yet be given to these questions, but some general conclusions can be gleaned from the mass of sometimes conflicting evidence. Dr. Luke and his colleagues report that their 143 patients were drawn from well over 1,000

hypertensive patients, but point out that virtually all these had already been screened by at least one hospital physician before being referred to their care. It is probable that the true prevalence of unilateral renal disease among hypertensive patients is much lower, certainly less than 5%⁴ and possibly as low as 1%. Several clinical criteria have been suggested as likely indicators of secondary hypertension: they include lack of family history, an age less than 40 years, and rapid evolution of severe hypertension. However, A. Breckenridge and colleagues,¹ in a recent detailed study of 229 hypertensive patients younger than 40, pointed out the rarity of unilateral renal disease in this group, who again were selected by having had a previous examination. They found only 12 patients with renal arterial disease (six with stenosis), two with absent kidneys, and one with a renal cyst. Dr. Luke and his colleagues are likewise cautious in their assessment of the value of clinical clues, and this makes the investigation of hypertensive patients all the more necessary. Among the investigations that all hypertensive patients should undergo to assess the severity and origin of the hypertension are a urine test for protein, a blood-urea estimation (supplemented by some simple clearance measurement), and, most important of all, a good intravenous urogram. This should be done in dehydration but include a contrast washout with an increase of urine flow⁵ stimulated by one of several techniques. Tomography of the kidneys may be necessary to show details of both the affected and the presumed normal kidney. In a growing number of hospitals it is possible to perform the valuable investigation of isotope renography.⁶ In a few hospitals renal scanning can be carried out by means of radioactive compounds concentrated in the kidney.⁷ All these procedures can be done on outpatients.

When these techniques suggest that some lesion of one kidney is present, further investigation will be necessary. For these the patient must be admitted to hospital, and because further investigation may require special facilities referral to an experienced centre may be requested. The commonest finding in the preliminary screening is some difference between the kidneys either in size or in rate of excretion. The presence of a unilateral lesion and hypertension does not of course indicate that the hypertension depends on the lesion. An aortogram and selective renal arteriograms are frequently necessary, particularly if renal-artery disease is suspected. Again, the detection of an arterial stenosis does not prove it to be the cause of a raised blood pressure, for many patients have renal-artery stenosis unrelated to their hypertension⁸ or unaccompanied by hypertension.⁹

How can one determine whether the unilateral renal lesion is the cause of the hypertension and that the patient will

benefit from operation? Much has been written on the relation of renal ischaemia (whether in terms of blood flow, diastolic pressure, or pulse pressure) to a rise in the systemic arterial blood pressure.¹⁰ Attempts to assess renal ischaemia have been made in various ways. Direct measurement of pressure drop across the stenosis has been attempted. A functional pattern of ischaemia (an increased reabsorption of filtered salt and water) has been sought by divided renal-function studies¹¹ or the washout pyelogram.⁵ And tests have been devised to detect an increase triggered off by the ischaemia of the hormones, renin, angiotensin, and aldosterone. Careful pyelograms to show the increased concentration of dye on the affected side have made divided renal-function studies less important than formerly. However, a knowledge of the contribution of the affected kidney to total renal function may be essential, as when nephrectomy is unavoidable. Unfortunately, measurement of the concentrations and rates of secretion of the hormones involved are still experimental procedures, but the introduction of an immuno-assay for angiotensin may make their assessment in patients with unilateral renal disease more readily available.

Even with full investigation it is a general experience that operation in some cases, whether on the renal artery or on the kidney itself, will not be successful. An important indication for operation, therefore, is the failure of conventional antihypertensive therapy to control the blood pressure smoothly.¹² Some other patients may be unable or unwilling to co-operate with treatment, and this possibility needs to be carefully considered when treatment is being planned for each patient.

Lung Transplantation

Immunological rejection is likely to remain for some time the most important problem in transplantation surgery. Oddly enough it seems to be unrelated to the complexity of the tissues concerned. For instance, patients have a greater host tolerance for kidney and liver than for skin. But apart from the immunological problem we still have to overcome many other difficulties specific to the individual organs being or likely to be transplanted.

The lung was first completely separated and reimplanted experimentally in 1951.¹ This work established principles that have been exploited on many occasions since. The first report of a technically successful lung homograft in man came in 1963.² The patient survived for 18 days—the longest survival time in man so far. During the last decade a great deal of experimental work has shown that there are two main technical and physiological problems that have to be overcome if lung transplantation is to be successful. Firstly, the lung, unlike the heart with its transplantable built-in mechanism of self-control, depends on a complex voluntary, biochemical, and autonomic nervous mechanism for its proper function. Total denervation results in a type of slow-deep

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