

migrants to Israel was of particular interest. The Agency has been especially active in the fields of asbestos carcinogenesis, liver cancer,<sup>3</sup> and cancer of the oesophagus.

Events have partly overtaken the Agency's efforts to determine whether DDT is a carcinogen for man or not. Exposure of mice to diets containing DDT increases the risk of their developing liver tumours, but the results are difficult to interpret because mice of many strains, especially males, are peculiarly prone to develop liver tumours. Moreover, DDT appears to decrease the risk of the development of other tumours such as lymphomas. An experimental study on rats is not sufficiently advanced for any conclusion to be drawn. Meanwhile the use of DDT has been banned in the United States. In many parts of the world where the Agency and W.H.O. operate DDT is an important weapon against malaria and various insect pests. Banning its use in such areas would seriously increase the risk of non-neoplastic disease and decrease food production. At present the cancer hazard for man from DDT is purely theoretical. On the basis of a preliminary evaluation of its own field studies the Agency has concluded that there seems to be "no correlation between DDT exposure and primary liver cancer or cancer at other sites." It will be interesting to see what stand the Agency and W.H.O. take in relation to DDT.

<sup>1</sup> International Agency for Research on Cancer, *Annual Report*, 1971, p. 128. Lyons, World Health Organization, 1972.

<sup>2</sup> Davies, A. M., and Sacks, M., *Israel Journal of Medical Sciences*, 1971, 7, 1331.

<sup>3</sup> International Agency for Research on Cancer, *Liver Cancer*. Lyons, I.A.R.C. Scientific Publications No. 1, 1971.

## Thymectomy for Myasthenia Gravis

The discovery of an association between the thymus and myasthenia gravis was originally based on two findings. Firstly, A. Blalock and colleagues<sup>1</sup> found in 1936 that thymectomy in a myasthenic patient led to a considerable improvement in her symptoms. Secondly, patients with the disease were found to have in common a histological change in the thymus. This was the presence of germinal centres and plasma cells in the gland, suggesting an immune response in the thymus, which does not normally show one.

Germinal centres and antibody production in the thymus can occur in animals if the antigen is directly injected into it. Moreover, the offspring of myasthenic mothers have transient myasthenia from birth, which disappears within a few weeks. Apparently there is a transmissible agent able to cross the placenta and cause the disease in the infant. The effect lasts long enough to make it unlikely that it is a small molecule, and it is reasonable to suppose, but unproved, that it is an IgG antibody. This would cross the placenta, and the duration of the effect in the child is commensurate with its half life. It thus seems that myasthenia may be the result of an immune response in the thymus leading to the production of antibody which can interfere with neuromuscular transmission.

It is difficult to see how an antibody can interfere directly with the action of a neurotransmitter, as the space across which the transmitter acts is smaller than the diameter of an IgG molecule. Biopsies of myasthenic muscle have shown IgG bound to the muscle in a striated pattern, not associated with the neuromuscular junction. While immunization of animals with thymic tissue results in an antibody with

affinity for muscle, the antibody also reacts well with smooth muscle and seems unlikely to have the selective effect of extra fatigability of voluntary muscle seen in myasthenia. Just as much of the antibody produced may be made at the site of injection of antigen, so the germinal centres in the thymus may be evidence of a local response to local thymic antigen. The nature of the antigen, whether endogenous or an infecting agent located in the thymus, remains completely unknown.

The effect of thymectomy in producing improvement in the disease suggests that the process does not normally exist to any extent outside the thymus. It is now well established that the thymus-dependent lymphocytes which are required for most humoral antibody responses need the thymus in which to mature. Thymectomy in the adult leads to depletion of these cells after about 200 days. The improvement in the disease which frequently occurs sooner than this is unlikely to be due to their depletion; it is more likely that it is due to the removal of the source of production of the antibody itself.

It used to be believed that improvement after thymectomy was seen most frequently in young girls.<sup>2</sup> Subsequently this was shown to be due to the infrequency of enlargement of the thymus in this group. Thus these girls had total thymectomy, whereas other patients had enucleation of an obviously abnormal part of the gland from a remainder that was also abnormal. A recent report<sup>3</sup> on a large series of treated thymectomy patients shows that the improvement rate is very high when total thymectomy is carried out, though many of the patients did not show improvement for many months after operation. The authors related the rate of response to the number of germinal centres in the gland: the more frequent the centres, the slower the remission. Early or late remissions were stable ones.

It appears that the remissions after surgery in myasthenia may be of two kinds—rapid response by removal of the antibody-producing tissue, and a more delayed response when depletion of T cells in the body prevents the abnormal response in other tissues. Thus thymectomy, which is clearly worthwhile in severe myasthenia, may be both eradicating a localized process in the thymus and in some patients also stopping a more remote production of antibody.

<sup>1</sup> Blalock, A., Mason, M. F., Morgan, H. J., and Riven, S. S., *Annals of Surgery*, 1939, 110, 544.

<sup>2</sup> Eaton, L. M., and Clagett, O. T., *American Journal of Medicine*, 1955, 19, 703.

<sup>3</sup> Papatestas, A. E., Alpert, L. I., Osserman, K. E., Osserman, R. S., and Kark, A. E., *American Journal of Medicine*, 1971, 50, 465.

## Surgical Ritual

In the complex and rapidly evolving organization of modern surgical wards and operating theatres it is inevitable that many procedures have to be made "routine." Indeed it is highly desirable that patients have routine screening of chest and blood before surgery, that consent forms are signed, that identification labels are firmly fixed, and that a hundred other tasks are performed. Yet a routine must never become a senseless ritual which persists because it has become hallowed by tradition—the tourniquet has at last disappeared from the foot of the bed of every amputation case—and should exist only if it is based on sound reasons which can be easily understood by both medical and nursing staff. As knowledge and techniques advance,

every one of our traditions needs to be scrutinized and, if necessary, modernized.

Thorough preoperative shaving and disinfection of the skin have long been considered important. Shaving may indeed be necessary in order to give the surgeon access to a hairy scalp or abdomen, but it hinders the sterilization of the skin. R. Seropian and B. M. Reynolds<sup>1</sup> found a 5.6% infection rate after razor preparation of the skin compared with 0.6% when either no shave at all was carried out or a depilatory cream was used. The infection rate was 3.1% if shaving was carried out immediately before the operation but rose to 20% if performed 24 hours or more before surgery, no doubt because of minor infection of the inevitable nicks and scratches produced by the razor. Resident skin bacteria are rarely pathogenic and may indeed be a direct asset to their host. The continual reduction of their numbers—for example, by repeated applications of hexachlorophane—may even encourage cross-infection with Gram-negative bacteria.<sup>2</sup> S. Selwyn and H. Ellis<sup>3</sup> have confirmed by skin biopsy that the patient's skin can be readily cleared of virtually all non-sporing contaminants by swabbing with 0.5% chlorhexidine or 1.5% iodine in alcohol acting for 30 sec. Exceptions to this simple routine are those cases particularly susceptible to clostridial infection, particularly elderly arterio-sclerotic patients undergoing amputation, when iodophor compresses for 15 minutes and systemic antibiotics are important prophylactic measures.<sup>4</sup>

Nasogastric suction has undoubtedly been of immense value in many cases of obstruction, perforation, and gastric dilatation, though it is apt to be used as a ritual routine in the postoperative period. Yet under modern surgical conditions a considerable amount of major abdominal surgery can be performed without inflicting this additional discomfort on the patient after operation. W. G. Hendry<sup>5</sup> has pioneered this "tubeless surgery" in gastric operations for many years, and suction is not even necessary for the majority of cases in the postoperative period after vagotomy for established pyloric stenosis.<sup>6</sup>

An important cause of post-anaesthetic deaths is inhalation of stomach contents.<sup>7</sup> Routine starving of the patient is carried out before operation to avert this disaster. Yet even such a basic nursing procedure as this is worth further thought, as is shown by a report from the Royal College of Nursing which has recently been published by Miss S. Hamilton-Smith.<sup>8</sup> From evidence collected in a study of the practice of four hospitals many patients were found to undergo a period of fasting considerably longer than necessary. "Nil by mouth" might mean that a patient could go without food and drink from early evening the day before operation to well in to the middle of the day of his operation, especially if lists were changed or delayed because of emergencies. Practices varied from withholding food only or both food and drink, and a light breakfast might in one nurse's estimation be a cup of tea and in another a couple of eggs. Miss Hamilton-Smith concludes that even in the most accepted routines "there is a need for responsibility for the procedures carried out by nurses to be squarely established." Policies need to be practical, easy to carry out, flexible, and clearly understood. It is this understanding of routine procedures and the reasons for deviating from them that is so important. When routine becomes a ritual it not only becomes meaningless but also potentially uncomfortable or even harmful to the patient.

<sup>1</sup> Seropian, R., and Reynolds, B. M., *American Journal of Surgery*, 1971, 121, 251.

<sup>2</sup> Forfar, J. O., Gould, J. C., and Maccabe, A. F., *Lancet*, 1968, 2, 177.

<sup>3</sup> Selwyn, S., and Ellis, H., *British Medical Journal*, 1972, 1, 136.

<sup>4</sup> Drewett, S. E., Payne, D. J. H., Tuke, W., and Verdon, P. E., *Lancet*, 1972, 1, 1172.

<sup>5</sup> Hendry, W. G., *British Medical Journal*, 1962, 1, 1736.

<sup>6</sup> Ellis, H., *Proceedings of the Royal Society of Medicine*, 1967, 60, 745.

<sup>7</sup> Morton, H. J. V., and Wylie, W. D., *Anaesthesia*, 1951, 6, 190.

<sup>8</sup> Hamilton-Smith, S., *Nil by Mouth. The Study of Nursing Care Series No. 1*. London, Royal College of Nursing, 1972.

## Charitable Help

It is not always financial help that a family needs most when its breadwinner is struck down. Sympathetic, practical advice is often urgently needed as well to set the family back on the road to recovery. In addition to its fund raising work the Ladies' Guild of the Royal Medical Benevolent Fund has been providing such support—with a welcome personal touch—for over 60 years. Many doctors and their dependants have reason to appreciate not just the financial help given by the two bodies but also the time and advice willingly given by the ladies of the Guild. With local branches throughout the country the members also keep a weather eye open for those—usually doctors' widows—who need help but may not know of the several charities which exist to help them.

The R.M.B.F. and the Guild form but one group of the quartet of the profession's national medical charities. Another is the Royal Medical Foundation of Epsom College, which though perhaps best known for its educational grants also provides annuities for elderly doctors or their widows in need. The B.M.A. itself is responsible for running the Sir Charles Hastings Fund, a general charity for all doctors, and the educational Dain Fund, while the latest arrival—and the biggest—is the Cameron Fund, now well into its third year of operation. This charity, started with the £800,000 left over after the general practitioners' Group Practice Loan Fund was wound up, directs its resources to helping G.P.s and their families.

After many years of working from separate headquarters, the R.M.B.F. and the Ladies' Guild are reorganizing themselves so that eventually they will operate together at Wimbledon—as Sir Thomas Holmes Sellors, President of the R.M.B.F. says in his letter on p. 594. In these days of rising administrative costs this is a sensible move, and the two bodies will have the support and good wishes of the profession behind them. Of course, all the major medical charities have always co-operated in seeking the best way to help individuals. Whether such co-operation could be strengthened is a question that can really be answered only by the funds themselves. While running costs might be cut with a more integrated administration, size is not everything, and for charities especially the identity of a particular fund may have a special meaning for benefactors and beneficiaries alike. Nevertheless, the medical charities might still usefully look at ways of working even more closely together as their administrative expenses and the demands on them will continue to rise inexorably.

Professional families are sometimes reluctant—and understandably so—to ask for charitable help, even when in serious straits, or they may be unaware that assistance is available. So practising doctors can emulate the Ladies' Guild and help not only by subscribing to their own charities—donations, covenants, or legacies are always welcome—but also by keeping a lookout for any medical families who may require support and advising them where to apply.