

removed and the patient restored to normal health with little surgical risk, full investigation and angiography should be carried out whenever this diagnosis is considered.

- ¹ Harvey, W. P., *American Journal of Cardiology*, 1968, 21, 328.
- ² Hickie, J. B., Gibson, H., and Windsor, H. M., *Medical Journal of Australia*, 1970, 2, 82.
- ³ Martin, C. E., Hufnagel, C. A., and de Leon, A. C., *American Heart Journal*, 1969, 78, 245.
- ⁴ Wight, R. P., McCall, M. M., and Wenger, N. K., *American Journal of Cardiology*, 1963, 11, 790.
- ⁵ Kaufmann, G., Rutishauser, W., and Heggin, R., *American Journal of Cardiology*, 1961, 8, 350.
- ⁶ MacGregor, G. A., and Cullen, R. A., *British Medical Journal*, 1959, 2, 991.
- ⁷ Currey, H. L. F., Mathews, J. A., and Robinson, J., *British Medical Journal*, 1967, 1, 547.
- ⁸ Oliver, G. C., jun., and Missen, G. A. K., *Guy's Hospital Reports*, 1966, 115, 37.
- ⁹ Fluck, D. C., and Lopez-Bescos, L., *Proceedings of the Royal Society of Medicine*, 1968, 61, 1115.
- ¹⁰ Miller, G. A. H., Paneth, M., and Gibson, R. V., *British Medical Journal*, 1968, 3, 537.

Suppurative Thrombophlebitis

The veins have served medicine and the physician well. Though the days when the apothecary-physician lined his purse from the proceeds of phlebotomy have long since gone, not a day now passes without millions of venepunctures being performed for many different reasons. Fortunately a single venepuncture with a needle and the withdrawal of blood rarely has any serious complications. Bruising, haemorrhage, and mild phlebitis can occur but are uncommon if the procedure is expertly performed.

Complications follow venepuncture when foreign substances are injected and when the means of injection—needle or catheter—is left in place for longer than a few minutes.¹⁻³ Most substances that we inject into veins have a pH, temperature, and osmolality different from blood and cause a physical or chemical inflammatory response in the vein wall. The end of a needle and the constant rubbing of a plastic catheter will also cause phlebitis. The incidence of phlebitis and thrombosis increases with the duration of the injury. After six hours many veins show some degree of phlebitis, and after 24 hours almost all have some abnormality varying from slight redness to an acute thrombophlebitis.⁴⁻⁵ This is not usually an infected thrombophlebitis, but in these early stages there is the danger of infection developing within the thrombus.

In a recent review of 521 patients treated for burns by long-term intravenous infusions through indwelling cannulae J. M. Stein and B. A. Pruitt⁶ found that 24 (4.6%) developed suppurative thrombophlebitis after 2-10 days of cannulation. The accompanying septicaemia caused the death of seven of these patients and was believed to be an important contributory cause of the death of another seven. In many of these patients the suppuration in the vein was silent and the first indication of infection was the septicaemia. In less than half were there local signs such as redness, tenderness, and a watery exudate at the puncture site. Suppurative thrombophlebitis must therefore always be remembered as a cause of septicaemia even though there are no localizing signs and even when there are other possible sources of infection.

Stein and Pruitt recommend excision of the superficial vein if it is believed to be the cause of the septicaemia. They treated 10 patients in this way and only one died. This patient had both long saphenous veins excised in the groins, but the infected thrombus extended into the iliac veins. This em-

phasizes the problem of the surgical treatment. A cure can be achieved only if the excision can be complete. This is possible when a short segment of a superficial vein is affected but not when the infected thrombus is in a large trunk vein. Most intensive-care units give long-term intravenous infusions through long catheters which pass from the superficial veins into the large veins of the abdomen and chest. The object of this is to avoid thrombosis, but in fact the blood in these large veins does sometimes undergo thrombosis, and the catheters always develop a layer of thrombus on their surface. This can become infected and produce emboli.

Thus septic thrombophlebitis should be remembered as a possible hazard of inserting needles or cannulae into veins. If it occurs it must be treated thoroughly with the appropriate antibiotics, and, if the area of thrombosis is limited, excision of the vein may be beneficial. Phlebography might help to delineate the upper limit of the thrombosis. When the thrombus is beyond surgical reach the catheter should be withdrawn and the antibiotics continued, unless the patient's life depends on intravenous medication. These patients present enormous problems of management, for the antibiotics are often not effective and death from septicaemia follows.

Can this complication be prevented? An aseptic technique during cannulation is essential, but the administration of local or parenteral antibiotics for prophylaxis is not advisable. The most effective prophylaxis is the restriction of long-term cannulation to a minimum. In many cases daily venepunctures in different veins for the administration of normal fluid requirements is adequate. Arm veins should always be used when possible, and the passage of catheters into the great veins should be restricted to those patients with few superficial veins in whom long-term intravenous therapy is mandatory.

- ¹ Bogen, J. E., *Surgery, Gynaecology and Obstetrics*, 1960, 110, 112.
- ² Hästbacka, J., et al., *Acta Anaesthetica Scandinavica*, 1965, 10, 9.
- ³ Elving, G., Hästbacka, J., and Tammisto, T., *American Heart Journal*, 1967, 73, 717.
- ⁴ Gray, T. C., *British Medical Journal*, 1967, 1, 107.
- ⁵ Thomas, E. T., Evers, W., and Racz, G. B., *Anaesthesia and Analgesia Current Researches*, 1970, 49, 150.
- ⁶ Stein, J. M., and Pruitt, B. A., *New England Journal of Medicine*, 1970, 282, 1452.

Inquire Within

One of the smaller but none the less useful benefits of belonging to the B.M.A. comes in its *Members Handbook*. Unlike many self-styled handbooks this one can be comfortably held in one hand. And perhaps its small stature combined, it must be admitted, with the plainly informative nature of its contents is responsible for its being overlooked more than it should be.

As well as giving much information on the B.M.A.—its functions, publications, policy decisions, and so on—the *Handbook* also offers advice on many problems that may puzzle or worry doctors in practice. A substantial section is concerned, for instance, with medical ethics, and as well as giving practical guidance it sets out in full the restatement of the Hippocratic Oath embodied in the Declaration of Geneva and the code on human experimentation now known as the Declaration of Helsinki. Other sections give information on financial matters, including superannuation. In short, though the *Handbook* cannot be described as either compulsive or compulsory reading, it does offer a helpful guide to some of the common problems of medical practice—and it is sent to members free.