

mitted the illness to several people with whom he had been in close contact, and after one patient had been admitted to Maridi hospital many further cases developed. Of the hospital's 230 staff, 76 developed the infection and 41 died—many of them at a time when the disease was thought to be typhoid fever and strict containment measures were not in operation. Transmission by unsterilised syringes and needles may have been responsible for many cases.

The outbreak in Zaire, about 1500 km distant from the Sudanese focus, developed three weeks later. There were 237 cases and 211 deaths, but the attack rate was only between 1 and 8 per 1000 exposed. The disease was thus not as highly transmissible as was at first thought. Very close contact was required, particularly with body fluids, while nursing patients at home or in hospital; droplet transmission seems not to have occurred.

The reservoir of infection is suspected to be rodents, and after the initial human infection the disease is transmitted by human contact. The infection can be contained by strict isolation, use of protective clothing, and adequate disposal of secretions and excretions. As soon as these measures were enforced during the recent outbreaks, new cases ceased to occur.

In future, this infection, together with Lassa fever, must be suspected as a cause of fever in severely ill persons either living in Central Africa or who have visited the region within the preceding two to three weeks, and in whom malaria can be excluded. Screening of such patients, in properly equipped centres and by trained staff, is essential. Last year one of the staff of the Microbiological Research Unit at Porton working with the virus accidentally inoculated himself, and the course of his illness is described in detail at p 541. To control future outbreaks WHO is building up a register of centres and institutions with the necessary skills and personnel to help at short notice. Finally, WHO itself has an important part to play in co-ordinating, providing, and exchanging information on this new illness, which poses yet another conundrum for the practitioner working in temperate climates.

<sup>1</sup> World Health Organisation, *Weekly Epidemiological Record*, 1977, **52**, 177.

<sup>2</sup> World Health Organisation, *Weekly Epidemiological Record*, 1977, **52**, 185.

## Management of oesophageal perforation

Perforation of the oesophagus is a serious condition which is frequently fatal, particularly when diagnosis or surgical treatment is delayed. Contamination of the mediastinum with gastric secretions, food, and bacteria causes cardiorespiratory embarrassment, fluid loss, shock, and fulminating infection. Nevertheless, with prompt diagnosis and aggressive surgical treatment many patients can be saved.

An excellent retrospective review by Triggiani and Belsey<sup>1</sup> of 110 cases of oesophageal perforation seen in one unit over 25 years highlights some important aspects of its management. During this period, 11 patients with spontaneous rupture were treated, their ages ranging from 28 to 75. The commonest early symptoms were acute chest pain or epigastric pain, associated with dyspnoea after vomiting or retching. The most important diagnostic sign was surgical emphysema in the neck,

which was present in every patient on admission. A chest radiograph and an oesophagogram (preferably with iodised oil) proved invaluable in confirming the diagnosis and locating the site of rupture. The ideal treatment of spontaneous rupture is primary repair provided it is done within 12 hours before the onset of suppurative mediastinitis. In the presence of established mediastinitis, severe dental sepsis, or oesophageal oedema, exteriorisation of the oesophagus followed by staged reconstruction offer the best hope of saving the patient's life, for half of those treated with conservative management (drainage of the pleural cavity and systemic antibiotics) will die.

Triggiani and Belsey saw 15 cases of instrumental perforation of the oesophagus. In eight patients this had occurred during diagnostic examination (affecting the cervical oesophagus in three and the lower oesophagus in three), and in seven during the dilatation of a stricture. In all cases the surgeon had used a rigid open-ended oesophagoscope, while perforation was commoner in patients under general rather than local anaesthesia. Wider use of the flexible fiberoptic oesophago-gastroscope should reduce the incidence of perforation during diagnostic procedures. Such instruments should be included in every oesophago-gastric surgeon's armament and should not be the sole property of endoscopic physicians, who are unable to deal with the complications they cause.

Treatment of instrumental perforation depends on the site, the underlying lesion, and the speed of diagnosis. Perforations of the cervical oesophagus may be treated conservatively—no oral feeding, but intravenous alimentation and antibiotics. Perforations of the intrathoracic oesophagus, on the other hand, require immediate thoracotomy, repair of the perforation, and surgical treatment of the lesion for which the examination was performed, and the only delay should be for emergency resuscitation. The length of interval between the perforation and surgical treatment greatly influences the outcome: thus the death rate increases fourfold when treatment is delayed for over 24 hours.<sup>2</sup>

Another fact reported in this review is that postoperative anastomotic fistulae occurred in 78 out of 2950 patients undergoing oesophageal surgery (2.6%),<sup>1</sup> being the commonest cause of death. The incidence of fistulae varied according to the procedure: it was 12% after intrathoracic oesophago-gastrostomy, 6% after cervical oesophago-gastrostomy, and 1% after interposition of left colon. The high incidence of leaks after the first procedure was ascribed to autodigestion of oesophageal tissue at the suture line due to the seepage of gastric secretions under the influence of negative intrathoracic pressure.

The only hope of saving the life of a patient with an established intrathoracic leak was found to be aggressive surgery.<sup>1</sup> This consisted of exteriorisation of the remaining oesophagus, closure of the stomach and its return to the abdomen, cervical oesophagostomy, feeding gastrostomy, and staged reconstruction at a later date using the left colon. This policy, however, would appear justified only in patients with a good prognosis. For neglected or undiagnosed intrathoracic fistulae in which the patient's condition is critical, pleural drainage together with hyperalimentation is all that is usually possible. As in other forms of oesophageal perforation, the use of an iodised oil oesophagogram proves invaluable in the early diagnosis of postoperative leaks.

<sup>1</sup> Triggiani, E, and Belsey, R, *Thorax*, 1977, **32**, 241.

<sup>2</sup> Sawyers, J L, et al, *Annals of Thoracic Surgery*, 1975, **19**, 233.