

advocates, but the main body of opinion supports a policy of partial parotidectomy, with preservation of the facial nerve *ab initio*. The latter procedure, whereby the facial nerve is identified close to its emergence from the stylomastoid foramen and the parotid gland is peeled off the nerve and its branches, has become a well-established and most successful surgical manoeuvre. Deeply plunging adenomata may warrant temporary division of the mandible to give access to the pharyngeal wall,⁷ so that removal may be accomplished as a monobloc procedure without breaching the mucosa beyond. Biopsy through the tonsillar bed is to be avoided if this ideal is to be realized. Radiotherapy has its advocates.⁸ It is mainly reserved for very frail patients, those with a recurrence after surgery, or those in whom the tumour was burst and spilled at operation. From the welter of opinion, a few rules have emerged. The main one seems to be that these benign tumours have to be resected with good clear margins to achieve success. So slow-growing are they that their true incidence of persistence may be shown only over a period extending beyond a surgeon's professional lifetime.

Other benign tumours arising in the parotid gland include adenolymphoma (Wartin's tumour) and oncocytoma. The former may be multicentric, while the latter is single. Local "shelling out" of these small, often soft, painless masses may be followed by recurrences. Harmless, usually remaining small, they are radioresistant, and nowadays are histological curiosities found in partial parotidectomy specimens.

Adenoid cystic carcinoma ("cylindroma") is frankly malignant, arising predominantly in the submandibular gland or palate and metastasizing along nerve sheaths or tissue planes rather than to regional nodes. Growing slowly, these tumours are radioresistant and warrant the most determined attempts at composite resection with wide margins. A pathology department well versed in assessing frozen sections is an invaluable adjunct to submandibular surgery, since composite resection of the adjacent part of the floor of the mouth is desirable when a cylindroma is found, and this diagnosis may be made only when a submandibular gland is exposed. Simple removal of the submandibular gland cannot be regarded as a "cancer operation," and operation on local recurrences is a disappointing procedure. Difficulty in diagnosis by frozen section is an indication for closing the incision until paraffin section is available. The most disastrous results may follow on resection of the submandibular gland with radiotherapy to the area when a cylindroma is belatedly identified, for the persistent tumour reappears as pulmonary secondaries or further up in the face on a relentless march to the base of the skull, and beyond. Massive palatal defects are warranted in attempts to resect cylindromata arising in that area.

Other malignant neoplasms include mucoepidermoid tumours⁹ (often in the parotid, palatal, or submandibular glands of children¹⁰), acinic cell tumours (mainly in the parotid glands of women), adenocarcinomata, spheroidal cell carcinomata, and squamous cell carcinomata, the latter perhaps arising from mucosal surfaces in the glands. In the parotid gland these may give rise to facial palsy and be painful. A vigorous assault, both radiotherapeutic and if feasible surgical, is justified, with cosmetic considerations thrown to the winds. The difficulties of management are manifold. Histological diagnosis may prove difficult. Biopsy material may be hard to obtain without risk of tumour dissemination. The facial nerve, astride which so many of these tumours grow, is vulnerable even to the surgeon equipped with operating microscope. Nevertheless, this field yields some of surgery's most rewarding results in terms of

effective, neat, and anatomically satisfactory resections of tumours.

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Lassa Fever

In 1969 two missionary nurses in Nigeria died of a mysterious illness contracted in Lassa in the north-eastern part of the country. A third nurse who had been flown to the United States recovered, and plasma taken from her was used successfully to treat a person who had acquired a laboratory infection from handling tissue cultures infected from the blood of these patients.¹ The viral aetiology of this condition, now called Lassa fever, has been established. A further outbreak of a similar illness occurred in 1970 at Jos in Nigeria, south-west of Lassa, and while performing a necropsy on two patients Dr. J. M. Troup contracted the infection and died of it.

The clinical picture of the original cases consisted of high fever, headache, vomiting, diarrhoea, and severe pharyngitis with white patches on the pharyngeal mucosa, palate, and tonsillar region. In addition most patients suffered from severe cough and epigastric pain, with a bleeding tendency. Other features included cervical lymphadenopathy, pleural effusion, myocarditis, and renal failure. A second outbreak in Jos suggested that the prognosis might not be so severe as was originally thought and that Lassa fever might range from asymptomatic infections to a severe, fulminating illness.

Recently H. A. White² has described the clinical data of 23 hospital patients. Altogether 28 cases were seen between January and February 1970 and complete data were obtained on 23 of them. There were 13 females and 10 males, and 12 of the 23 patients died. The mean age of those who died was 31.8 years. Though not all of the patients had severe symptoms, the typical disease again included high fever with headache, vomiting, diarrhoea, severe epigastric pain and tenderness, and the peculiar pharyngitis with white patches on the pharyngeal mucosa. Some patients suffered from abnormal bleeding into the abdomen and lungs and from the nasopharynx. Twenty patients had albuminuria. Initially the patients were given antimalarial therapy and were then treated with a range of antibiotics, but with no change in the course of the disease.

At the same time D. E. Carey and colleagues³ have reported on the epidemiology of the 1970 epidemic at Jos. This town is the capital of the Benue Plateau State and is located at latitude 9°52'N and longitude 8°52'E at about 4,000 ft (1,200 m) above sea level. The Evangel Hospital in Jos is a missionary general hospital of 56 beds. When the diagnosis of Lassa fever was confirmed virologically in 1970 an epidemiological investigation was carried out, and it appeared that the cases fell into two main groups—18 with

an onset in January and the remaining 5 in February. A more detailed review of the hospital records disclosed that nearly all these patients had been in contact with a single patient admitted early in January, whose illness was compatible with Lassa fever. The most striking feature of the outbreak was the apparent transmission of infection from one person to another, though the mode of transmission is unknown. The respiratory tract seems to be the most likely route.

Descriptions of the pathological findings in this condition are limited. G. M. Edington and H. A. White⁴ reported the necropsy findings (other than in the central nervous system) in two cases. The most striking histopathological changes were in the liver and spleen. In the liver widespread focal necrosis of parenchymal cells was associated with conspicuous deposition of lipofuscin pigment. Eosinophilic bodies were present in the sinusoids, which resembled those seen in yellow fever. However, the selective zonal pattern of hepatic necrosis described in this condition was lacking. No viral inclusion bodies were found. In the spleen the Malpighian bodies showed lymphoid depletion and were surrounded by areas of eosinophilic necrosis. The splenic veins showed subendothelial lymphocytic infiltration. Changes noted in other organs were a focal pneumonitis, and oedema with areas of haemorrhage in the intestines, myocardium, and kidneys.

The viral aetiology of Lassa fever was established in 1969.^{1 5} Subsequently the virus was shown to be closely related to lymphocytic choriomeningitis virus and the Tacaribe group of viruses. These are now referred to as the arenavirus group which includes at least six different but related agents. B. E. Henderson and his colleagues⁶ found that the virus would multiply without producing symptoms in newborn mice, being present in the brain and many other tissues, but in weanling mice it multiplied only in the brain. Serological tests with specific neutralizing antisera to the arenavirus group showed that Lassa virus was distinct from that of lymphocytic choriomeningitis and the other viruses of the group, whereas cross-reactions were obtained by complement-fixation. Further serological studies in West Africa showed that antibody could be detected in a few individuals in other parts of Nigeria and also in the near-by country of Guinea. Subsequent serological studies on missionaries who had had a history of prolonged undiagnosed febrile illness while stationed in Africa gave evidence of previous Lassa virus infection as determined by the presence of complement-fixing antibody.

Despite numerous attempts to find a reservoir of infection none has been identified. But in view of the relationship between Lassa virus and that of lymphocytic choriomeningitis a rodent reservoir seems possible. J. S. Porterfield⁷ has raised the question whether this is a new disease or whether its presence has gone unnoticed in the past. Some evidence suggests that a case investigated in 1951 during an investigation of yellow fever might have been due to Lassa virus infection.

Between 2 and 26 March 1972 a further outbreak of 11 cases of Lassa fever occurred among patients and staff members in the Zorzor district of Liberia, West Africa.⁸ All were adult women patients in hospital or working on the obstetric ward. Four of them died. The symptoms in this outbreak were similar to those observed in the Jos outbreak. Though rodents are plentiful in the district, no evidence of virus or antibody to this agent has been obtained from field studies.

These outbreaks probably represent a freak of nature whereby the natural history of an otherwise silent virus in-

fection is somehow disturbed. They are reminiscent of some arbovirus infections in which the normal chain of transmission from vertebrate host is maintained by insect vectors and only comparatively rarely does man become involved in the chain of transmission. But the Lassa virus is clearly not an arbovirus and its reservoir is as yet unknown. In its unusually lethal properties it recalls the virus in the Marburg incident of 1967,⁹ in which 29 patients contracted an acute, severe, generalized infection with fever, bradycardia, headache, conjunctivitis, myalgia, epigastric pain, vomiting, diarrhoea, and severe prostration. Seven patients died, and the source was traced to infected monkey kidney tissue and blood from vervet monkeys imported from Uganda.¹⁰

These episodes also highlight some of the dangers inherent in medical research. Over the years there have been a number of outbreaks of severe and even fatal infections acquired in the laboratory. Among them have been infections with rickettsiae, notably epidemic typhus, scrub typhus, and Q fever, and also with viruses. They serve to emphasize the need for strict attention to detail in handling tissue cultures, inoculating animals, and carrying out necropsies on patients who have died of unknown causes.

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² White, H. A., *Transactions of the Royal Society of Tropical Medicine and Hygiene*, 1972, 66, 390.

³ Carey, D. E., et al., *Transactions of the Royal Society of Tropical Medicine and Hygiene*, 1972, 66, 402.

⁴ Edington, G. M., and White, H. A., *Transactions of the Royal Society of Tropical Medicine and Hygiene*, 1972, 66, 381.

⁵ Buckley, S., and Casals, J., *American Journal of Tropical Medicine and Hygiene*, 1970, 19, 680.

⁶ Henderson, B. E., Gary, G. W., Kissling, R. E., Frame, J. D., and Carey, D. E., *Transactions of the Royal Society of Tropical Medicine and Hygiene*, 1972, 66, 409.

⁷ Porterfield, J. S., *Transactions of the Royal Society of Tropical Medicine and Hygiene*, 1972, 66, 399.

⁸ *Morbidity and Mortality Weekly Reports*, 1972, 21, 237.

⁹ *British Medical Journal*, 1968, 2, 575.

¹⁰ Kissling, R. E., Murphy, F. A., and Henderson, B. E., *Annals of the New York Academy of Sciences*, 1970, 174, 932.

Discontinuance of Libel Case

The case of Drummond-Jackson v. B.M.A. and Others was discontinued on 31 October when the following agreed statement was made in open Court.

"We are all very grateful to your Lordship for giving us time for further discussions.

"It has become increasingly clear as this case has proceeded that a full examination of the issues would require many months of further evidence and the attendance of a large number of medical and academic witnesses to express their opinions on the difficult scientific questions which arise for decision.

"Against this background the parties are happy to tell your Lordship that they have settled this action on the terms that it is discontinued with all parties bearing their own costs and that this agreed statement is made in open Court with the concurrence of all concerned.

"The Defendants all recognize and acknowledge that the Plaintiff is a man of the highest integrity and skill and of outstanding ability as a dentist.

"The Plaintiff for his part withdraws any allegation against the Defendants or any of them of dishonesty or impropriety. Further, he recognizes and acknowledges that the *British Medical Journal* has a right and duty to its readers and to the medical profession generally to publish articles such as that submitted to them by the individual Defendants and to comment on them."