For Debate . . .

Patients with suspected Lassa fever in London during 1984: problems in their management at St Thomas's Hospital

ANTHEA J TILZEY, MARGARET WEBSTER, J E BANATVALA

Abstract

During 1984, 23 patients in whom a diagnosis of viral haemorrhagic fever was considered presented to the accident and emergency department at St Thomas's Hospital. There were no confirmed cases of viral haemorrhagic fever. Nine patients were transferred to Coppett's Wood Hospital, the nearest specially designated high security isolation unit. Malaria was the final diagnosis in 14, and in six this diagnosis was confirmed only after examining repeated smears at Coppett's Wood Hospital. Transferral of patients to such units is time consuming, expensive, and often unnecessary. Specially designated isolation units in district general hospitals and all teaching hospitals would simplify and improve the care not only of patients with a possible viral haemorrhagic fever but also patients with tuberculosis, multiply resistant staphylococcal infections, and viral infections that may be hazardous if transmitted to immunocompromised patients.

Introduction

As a result of the large numbers of people travelling internationally the management of patients in London who may have viral haemorrhagic fevers such as Lassa fever provides problems. Data from monthly figures on air passenger traffic between west Africa and the United Kingdom suggest that about 800 travellers arrive each day from west Africa, mostly to airports serving London (Civil Aviation Authority UK airports' monthly statements of movements, passengers, and cargo (up to and including October 1984)). The risk of dealing with a patient with Lassa fever is generally accepted to be greatest in central London. With the exception of the recent case of a British nurse who was flown home from Sierra Leone to Bristol and a patient who was travelling to the United States all confirmed cases since 1972 have been admitted initially to hospitals in inner London. There are a large number of west Africans living in the catchment area of St Thomas's Hospital, many of whom visit west Africa and present with a febrile illness at our accident and emergency department on their return. Their assessment and management gives rise to different and sometimes difficult problems. We describe our experience in dealing with such patients during 1984.

Department of Virology, St Thomas's Hospital, London SE1 7EH
ANTHEA J TILZEY, MB, MRCP, senior registrar
J E BANATVALA, MD, FRCPATH, professor of clinical virology

Department of Microbiology, St Thomas's Hospital
MARGARET WEBSTER, SRN, senior nurse, infection control

Correspondence to: Professor Banatvala.

Current procedure

On each accident and emergency card there is a designated space in which the receiving nurse must record details of recent travel abroad. Patients with fever who have recently visited an area in which Lassa fever is endemic or worked in or visited hospitals in west Africa are admitted to a strict isolation room in the accident and emergency department. The room contains the minimum of fittings and is equipped with two HEPA extraction filters. The patient is seen by a medical registrar or senior registrar, and blood is taken for examination for malarial parasites. Thick and thin films are made in a class 3 safety cabinet in the haematology department, fixed in formaldehyde, and then examined. This procedure takes about two hours: drying, fixing, and staining the films takes one hour and examination may take another hour.

If malaria is diagnosed the patient is admitted to a single room in a general ward and "excretion, secretion, and blood" precautions are taken, these precautions being relaxed when a response to antimalarial treatment is observed. If malarial parasites are not observed advice is sought from a consultant or deputy in infectious diseases at Coppett's Wood Hospital, London, and the Communicable Disease Surveillance Centre, London. From these consultations patients are categorised as being of high, moderate, or minimal risk of having viral haemorrhagic fever.[1] Patients in whom there is a high or moderate index of suspicion are transferred to Coppett's Wood Hospital in an ambulance, ordered by the district medical officer. High risk patients travel in a special isolation ambulance that does not contain a Trexler unit whereas moderate risk patients travel by ordinary ambulance, the staff wearing protective clothing. Patients of minimal risk or in whom an alternative diagnosis is strongly suspected are admitted to a single room in a general ward at St Thomas's Hospital and "excretion, secretion, and blood" precautions taken.

Experience during 1984

In 1984, 23 patients in whom a diagnosis of viral haemorrhagic fever was considered presented to our accident and emergency department. There were, however, no confirmed cases of viral haemorrhagic fever. Malaria was the final diagnosis in 14 patients. In eight of these patients malaria was diagnosed from the initial films examined at St Thomas's Hospital. One patient who had not responded to treatment after 24 hours was transferred to Coppett's Wood Hospital, where his condition subsequently improved. Nine patients whose initial malarial smears yielded negative results were transferred to Coppett's Wood Hospital. Results of repeated blood smears from six confirmed the diagnosis of malaria. The three other patients were found to have a urinary tract infection, acute respiratory disease, and an unspecified acute virus infection, respectively. One patient was transferred to the infectious diseases unit at Hither Green Hospital, London, and he was later discharged with the diagnosis of an unspecified viral infection.

Five patients in whom malarial smears yielded negative results and the index of suspicion was low were admitted to St Thomas's Hospital. Three had upper respiratory tract infections, one lobar pneumonia, and one acute appendicitis.

Discussion

Lassa fever is the only viral haemorrhagic fever that has been imported into the United Kingdom. Since its recognition in 1969, 10 confirmed cases have been reported. Although actual confirmed

cases of Lassa fever in the United Kingdom are uncommon, there are several patients in whom this diagnosis has to be considered.

When first recognised Lassa fever was believed to be a dangerous disease with a high mortality. It is now known, however, that mild forms of the disease are common and there is negligible risk of secondary person to person spread via the airborne route, except in those patients with pneumonia. Indeed, there has been no documented secondary person to person spread outside Africa. There have, however, been two cases in the United States, which were probably laboratory acquired.[2 3] This emphasises the risk to laboratory personnel who have to handle potentially infectious specimens, particularly if the specimens are not adequately designated as high risk.

Malaria is the most common diagnosis in patients who are suspected of having viral haemorrhagic fevers, and it is important to make this diagnosis and initiate appropriate treatment without delay. Emond *et al* showed that over two years (1976-7) malaria was the most common diagnosis in patients admittted to Coppett's Wood Hospital with a febrile illness within three weeks' return from tropical Africa.[1] Of 23 patients seen at St Thomas's Hospital in 1984, 14 had malaria and in six the initial smears yielded negative results. We think, therefore, that attempts to diagnose malaria could be made before transferring patients to an infectious diseases unit, and if malaria is strongly suspected several smears should be examined as African patients often have a low level of parasitaemia.

The minimum time needed to establish a diagnosis of malaria may be extended considerably, particularly at night or weekends, if the activity of laboratory personnel is diverted to cope with an emergency—for example, cross matching before operation for a leaking aneurysm. If to this is added the time spent in local consultation, obtaining advice from the Communicable Disease Surveillance Centre and doctors at Coppett's Wood Hospital, and waiting for an ambulance, patients who are suspected of having viral haemorrhagic fever may have to wait an unacceptably long time in isolation in the accident and emergency department.

A British doctor who had been working in Sierra Leone presented at St Thomas's Hospital with fever and abdominal pain, symptoms similar to those found in a Nigerian patient who had presented at the hospital and in whom Lassa fever had been subsequently confirmed.[4] The doctor, however, was diagnosed as having acute appendicitis, taken to theatre, and found at operation to have a gangrenous appendix that was about to perforate. This case emphasises the need for a degree of clinical freedom when dealing with these patients as the inevitable delay of several hours that would have occurred if this patient had been transferred might have endangered his life.

Thus transferral of patients with suspected viral haemorrhagic fever to a specially designated high security isolation unit such as Coppett's Wood Hospital is time consuming, expensive, and often unnecessary. Fortunately, St Thomas's Hospital is fairly close to such a unit, but most hospitals are many miles from their nearest unit. The Department of Health and Social Security memorandum on Lassa fever, which was published almost a decade ago, gives guidelines that are outdated and inflexible.[5] A working party has been convened to produce a revised memorandum.

Patients with viral haemorrhagic fever are unlikely to transmit infection via body fluids to health care personnel unless there is percutaneous exposure or exposure of mucous membranes. We believe therefore that if our hospital had an isolation unit there would be little risk in admitting patients of minimal or moderate risk or patients in whom an alternative diagnosis such as malaria was strongly suspected on clinical grounds. Patients would be kept in the unit for a limited period of observation, and a strictly controlled number of investigations would be carried out provided specimens were adequately labelled with biohazard or danger of infection labels and transported with appropriate precautions. Unfortunately, only a small number of hospitals, including teaching hospitals, have such units, which are also appropriate for the care of patients with tuberculosis, multiply resistant staphylococcal infections, and viral infections that may be transmitted to immunocompromised patients—for example, herpes zoster. Such a ward would also be useful for the management of patients with infections with human T cell lymphotropic virus-III/lymphadenopathy associated virus (HTLV-III/LAV), particularly if they are likely to bleed—for example haemophiliacs.

The compromise adopted by many hospitals to nurse patients with infections in cubicles located in general wards is unsatisfactory as the expertise and discipline inherent in an isolation unit may not always be enforced. This may result in unnecessary exposure of patients as well as medical, nursing, and laboratory staff. Roughly 36 patients each month with various infections are cared for in such cubicles. Specially designated units, manned by trained nursing and ancillary staff, in which consultant physicians and surgeons manage their own patients with guidelines recommended by the control of infection team, should be part of each district general hospital and all teaching hospitals. Perhaps such facilities might help to obviate some of the unnecessary anxiety and exaggerated precautions proposed not only for viral haemorrhagic fevers but also for patients who may have HTLV-III/LAV infections.

This decade has seen an emergence of newly recognised infections. Both undergraduate and postgraduate medical and nursing staff should be given adequate training in infectious diseases and their control. Unsatisfactory arrangements in many hospitals makes this difficult to achieve.

We thank Drs Emond and Galbraith for their help in the management of our patients.

References

1 Emond RTD, Smith H, Welsh PD. Assessment of patients with suspected viral haemorrhagic fevers. *Br Med J* 1978;i:966-7.
2 Leifer E. Lassa fever, a new virus disease of man from West Africa II. Report of a laboratory-acquired infection treated with plasma from a person recently recovered from the disease. *Am J Trop Med Hyg* 1970;**19**:677-9.
3 Galbraith NS, Berrie JRH, Forbes P, Young S. Public health aspects of viral haemorrhagic fevers in Britain. *R Soc Health J* 1978;**98**:152-61.
4 Cooper CB, Gransden WR, Webster M, *et al*. A case of Lassa fever: experience at St Thomas's Hospital. *Br Med J* 1982;**285**:1003-5.
5 Department of Health and Social Security, Welsh Office. *Memorandum in Lassa fever*. London: HMSO, 1976.

(Accepted 13 August 1985)

What is the present status of the Q-T sensing pacemaker?

Considerable interest has been generated in using different indicators of alteration in metabolic demand that may bring about changes in the rate of VVI pacemakers. Some of these so called biosignals that have been evaluated are: P wave, evoked QT, physical activity, respiratory rate, pH, central venous oxygen saturation, stroke volume, central venous blood temperature, and right atrial pressure. The type of pacing referred to in the question is now called rate responsive pacing.[1] A conventional unipolar pacing electrode is combined with a microprocessor based pacemaker that senses the evoked T wave that follows a paced ventricular depolarisation and measures the interval between the pacemaker stimulus and the evoked T wave (ST-T) interval. A reduction in this interval causes an increase in the rate and the converse a reduction.[2] The current model is fully programmable. Interestingly, antiarrhythmic drugs may limit the usefulness of this system by prolonging QT time, so that this interval may not be capable of being sensed by the pacemaker as the ST-T interval may exceed the sensing window. Such drugs may also produce bimodal T waves, thus causing the pacemaker to produce non-physiological variations in heart rate.[3] Retrograde ventriculoatrial conduction may occur and lead to a reduction in cardiac output in patients with compromised left ventricles. Incorrect sensing of the biosignal may potentially produce an undesirable high ventricular rate, thus leading to the rate responsive mediated tachycardia syndrome. Currently, single chamber rate responsive pacing may be considered to be a step forward in pacing technology and should lead in the not too distant future to the development of a dual chamber rate responsive device.—JOHN HORGAN, consultant cardiologist, Dublin.

1 Rickards AF, Donaldson RM. Rate-responsive pacing. *Clinical Progress in Pacing and Electrophysiology* 1983;**1**:12-9.
2 Donaldson RM, Rickards AF. Rate-responsive pacing using the evoked QT principle. A physiological alternative to atrial synchronous pacemakers. *PACE* 1983;**6**:1344-9.
3 Goicolea de Oro A, Ayza MW, De La Llana R, *et al*. Rate-responsive pacing: clinical experience. *PACE* 1985;**8**:322-8.