PUBLIC HEALTH RESPONSE TO A SUSPECTED CASE OF LASSA FEVER

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ABSTRACT

The aims of our response to this suspected case of Lassa fever were to identify people with high risk exposures to the case, and to institute quarantine surveillance for contacts where necessary. We investigated the exposure histories of people in the same aircraft as the case and also the hospital staff involved in his care. No-one was found to have had a high risk exposure, defined as percutaneous or mucosal contact with the patient's body fluids. A diagnosis of Lassa fever was not ruled out until week five (the final diagnosis appeared to be leptospirosis). This incident was a good opportunity to rehearse the NSW Contingency Plan for Cases of Suspected Quarantinable Diseases. The plan worked well, but will be reviewed in light of our experience.

1. INTRODUCTION

On May 21, 1993, a 48-year-old male resident of Ghana arrived in Sydney on a flight from Amsterdam. He had collapsed on the plane and was thought by a doctor on board to have had a heart attack. He was taken to St George Hospital directly from Sydney Airport.

On assessment at the hospital he was found to be in acute liver and renal failure, having seizures and a bleeding tendency. He was mildly febrile. Given his presentation and country of origin, the attending clinicians included Lassa fever or another viral haemorrhagic fever (VHF) in the patient's differential diagnosis.

Lassa fever is endemic in rural West Africa and is generally acquired from contact with infected rats or their excreta[7]. These diseases have a high fatality rate and can be transmitted to those in close contact with the patient.

The public health response to this case, following the State's Contingency Plan for Cases of Suspected Quarantinable Diseases[1], was organised by the Public Health Unit (PHU) for Central and Southern Sydney and the Epidemiology Branch, NSW Health Department.

The main aims of our response were to:

- determine whether any airline passengers or crew, or staff at St George Hospital, had had percutaneous or mucosal exposure to the patient's body fluids (i.e. a needle stick injury or a splash of the patient's body fluid onto the eyes, mouth or broken skin), as such people would be considered for prophylactic treatment with the anti-viral drug ribavirin; and
- commence quarantine surveillance of contacts (monitoring for fever for 21 days after the last exposure to the patient), and to inform them about the nature of the disease and their degree of risk.

2. THE INVESTIGATION

2.1 Air travel contacts investigation

We obtained details of the patient's flight from the airline company. The doctor and cabin crew who had assisted the patient, and two passengers sitting near him, were considered at possible risk. The airline's medical section undertook follow-up of the cabin crew, and the Northern Sydney PHU and the Victorian Health Department each agreed to conduct surveillance for a passenger residing in their area. The doctor was traced a few days before his arranged departure from Australia. He undertook to monitor his temperature for the required period and notify health officials if he became unwell.

2.2 St George Hospital staff investigation

The patient had spent time in the Emergency Department, the Radiology Department, the Intensive Care Unit and operating theatres. Also, almost all laboratory staff in the hospital had some exposure to the patient's body fluids.

We prepared a questionnaire to determine the exposure risk of staff in these areas to the patient and/or his body fluids. Any staff with definite percutaneous or mucosal exposure to the patient's body substances were defined as being at high risk; staff with possible insensible percutaneous/mucosal exposure were defined as medium risk (e.g. body fluid exposure on apparently intact skin), and those with potential aerosol exposure only were defined as low risk. A team assembled from the Public Health Network assisted us with interviews.

In accordance with contact surveillance guidelines[2], staff who had been in contact with the patient were requested to monitor their temperature for a period of 21 days since their last exposure and report to the Staff Health Clinic or Emergency Department if febrile (>38.3 degrees C) or acutely ill. Brief guidelines were prepared to assist these units in the assessment of any staff who reported.

Memos were distributed reminding staff who were in continued contact with the patient to practise full infection control procedures, and to report immediately any infection control accidents. Staff contacts were asked not to donate blood until further notice.

3. THE PATIENT

Diagnosis of the patient was complicated by the necessity for early and multiple antibiotic treatment and repeated blood transfusions. Acute phase sera testing showed no positive results for a range of infectious diseases including Lassa, Marburg and Ebola haemorraghic fevers; leptospirosis; rickettsiae; hepatitis A, B and C; human immunodeficiency virus; and Cytomegalovirus. Repeated malaria blood films were negative. Toxoplasmosis and Yellow fever test results were consistent with past infection and past vaccination, respectively. Blood, cerebrospinal fluid (CSF), urine and stool culture and CSF, urine and stool microscopic examination were all negative. History from the patient's relatives revealed no definite contact with rats, although the patient had travelled to a rural region of Ghana a few days before departing for Sydney.

A VHF diagnosis was excluded after a negative convalescent phase test carried out by the Centers for Disease Control (CDC), USA, in week five of the illness. The final diagnosis appeared to be leptospirosis.

4. Results of St George Hospital staff investigation

We obtained exposure information on 211 staff, of whom 173 (82 per cent) were interviewed in person. Of the 211, 193 had had some kind of contact with the patient or his body fluids. No staff reported a definite high risk exposure, 124 had been in situations of medium risk, and 53 were at low risk. A further 24 were determined to be at no risk.

Monitoring continued over five weeks. A total of four staff reported sick, one with a probable viral illness, two with upper respiratory tract infections and one with tonsillitis. When the patient's negative diagnosis for a VHF was known, all staff were advised that monitoring was no longer required.

5. Discussion

There are at least 12 different types of viral haemorrhagic fever. Of these Lassa fever, Rift Valley fever, and Crimean-Congo, Marburg and Ebola haemorrhagic fevers occur in Africa. Dengue and Yellow fevers acquired in Africa can also become haemorrhagic[3].

Experience with Lassa fever after it was identified in 1969 suggested the potential for aerosol transmission to health care workers or other contacts was great. CDC therefore recommended extremely high-level infection control facilities[4]. However, further research has shown the likelihood of aerosol transmission is low, and this, in conjunction with the availability of ribavirin for treatment and prophylaxis, led CDC to revise its infection control guidelines for these diseases[5,6]. The newer guidelines primarily require universal precautions similar to those used against AIDS and hepatitis, as well as 21-day surveillance for known contacts of the patients[7].

The possibility of a VHF case occurring in NSW is thought to be extremely low, although direct flights from Africa and South America to Sydney, and increasing international travel, make this risk real. There has been only one reported VHF in NSW: a convalescent case of Lassa fever diagnosed in a rural hospital in 1985. The occurrence of 'false positives', i.e. suspected cases which turn out not to be a VHF, is more likely[1]. Malaria would be a more common 'true' diagnosis in these patients[7].

Although Westmead Hospital has been designated the VHF treatment centre for NSW, suspected cases will most likely be identified in another hospital and may be too ill to be transferred. Therefore, all hospitals and PHUs in NSW should be prepared for the occurrence of a VHF case.

The Contingency Plan for Cases of Suspected Quarantinable Diseases, developed by the NSW Health Department's Epidemiology Branch, provides guidelines on both preparations for, and management of, a suspected VHF. If a hospitalised patient is reasonably suspected of having a VHF, the patient should be isolated and barrier nursed, universal precautions should be fully implemented (for both clinical staff managing the patient and laboratory staff handling the patient's specimens) and the NSW Health Department immediately informed.

This investigation was a good opportunity to evaluate the contingency plan. It worked well in guiding our response, however, a working party is now reviewing it in light of our experience.

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Letter to the editor

I read *Compilation of a General Practitioner Database* in the July *Public Health Bulletin* with interest. I suspect all Public Health Units have grappled with this problem to arrive at some sort of GP listing. The systematic approach used in Central Sydney is quite remarkable. Our experience in the Hunter is consistent with that of the authors in what a useful resource an accurate GP listing is in many aspects of our work.

I wonder if the authors could elaborate on a few points that may be of further value to others in the field. Could they briefly discuss the relative merits of each source of GP data? In particular, was one source particularly better than another?

Once having established a GP database, the ongoing issue is keeping it up to date. Can the authors offer any advice from their experience as to how this might be achieved most effectively?

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