PROVINCE OF KWAZULU/NATAL
DEPARTMENT OF HEALTH

DEPARTMENTS OF MEDICINE - PIETERMARITZBURG
HOSPITALS

Lethal Communicable Diseases
GUIDELINES

Preamble

Experience at Edendale Hospital in the 1980s and 1990s has shown that there must always be concern in hospitals in Kwazulu-Natal about the possibility of the admission of further cases of Congo Fever, or, to give it its full name, Crimean-Congo Haemorrhagic Fever (CCHF). Such concern is essential, as the greatest risk of acquisition of secondary Congo Fever is to the ambulance, medical, nursing and laboratory personnel who come into contact with the index case, or blood or secretions, when the patient first presents to the hospital in the haemorrhagic phase of the disease, before appropriate steps can be taken to isolate the patient.

Now that South Africa has been integrated into Africa (and the rest of the world, for that matter), and now that travel and communication are so frequent and fast, there also needs to be concern about the possibility of cases of other potentially lethal communicable diseases landing on our doorsteps. Here we refer to the other viral haemorrhagic fevers (VHF) seen in Africa – Marburg, Ebola, Lassa and Rift Valley fevers, and to SARS (the severe acute respiratory syndrome) and “Bird Flu” (influenza virus H5, N1). We now need to add emerging infections such as the “Lujo” arenavirus to this list.

Clinical Features

Deciding whether or not a given patient ought to be managed as suspected VHF calls for a clinical decision based on good judgement. CCHF is endemic to South Africa, especially in the drier, Western parts of the country, so it is considered in more detail here. Gear et al (1) set down guidelines for CCHF, but the findings of the team that managed the outbreak of CCHF at Tygerberg Hospital in the Cape in the 1980s have been published (2) and give more specific indications as to the circumstances under which a diagnosis of CCHF ought to be seriously entertained. Thus: symptoms "severe headache, backache, myalgia, arthralgia, mood changes, bleeding tendency and fever", accompanied by signs "tachycardia, tender abdomen and liver, bleeding tendency and injected conjunctivae" and with a history of "contact with animals in a farming community or tick bite". The incubation period averaged 5 days in the seven secondary cases in the Tygerberg outbreak. The bleeding tendency first manifested 3-6 days after the onset of the illness and the fever usually subsided after 5-10 days of illness. Leucopaenia and thrombocytopenia were usual but not universal findings.
The authors suggest that these findings ought to lead to initiation of the appropriate procedures for the isolation and investigation of the case as one of suspected VHF. It is as well to remember that there are a number of conditions which can also manifest as haemorrhagic fever, and those short-listed in the above article include other viral and rickettsial illnesses, septicaemia, leptospirosis, malaria, auto-immune diseases, adverse drug reactions and bone marrow dyscrasias. Appropriate tests for these conditions should be done as well as those specifically aimed at ruling out CCHF.

The National Institute for Virology has also issued a handbook on "Recognition and Management of Viral Haemorrhagic Fevers", compiled and edited by Dr Bob Swanepoel who is one of the world experts on this disease entity. A copy of this is available in the Department of Medicine at each of Edendale and Greys Hospitals. It is also available on the Pietermaritzburg Department of Internal Medicine website at the Greys Hospital website on the Intranet and the Internet (www.kznhealth.gov.za/medicine.htm) under the “Lethal Communicable Diseases” button. This handbook contains valuable information on all aspects of the diagnosis and management of Congo fever, as well as an objective method of obtaining an estimate of the likelihood that a particular patient needs to be managed in isolation. A copy of a clinical score sheet is available on the website and can be used to inform a decision about whether or not to manage a particular patient as a case of suspected VHF.

The other viral haemorrhagic fevers listed above may not necessarily present with exactly the same clinical features as Congo Fever, but the patients will be desperately ill and will have been ill for up to a week, and they will be bleeding from many sites and probably they will have a haemorrhagic rash. They will also have recently arrived in South Africa from a part of Africa where outbreaks of these diseases are known to occur, and, in all probability, there will be a known outbreak occurring at the time that the patient presents here. Occasionally new agents “emerge”, as happened in 2008 when a new strain of arenavirus originating in Zambia caused the deaths of 4 people, the index case and 3 health workers. These patients did not have an overtly haemorrhagic course, so not all “lethal communicable diseases” can necessarily be characterized as “haemorrhagic”. This reinforces the need for extra vigilance in clinicians, and indeed all health workers, to try to detect circumstances which may indicate that they are dealing with something unusual, and potentially very dangerous.

**Action**

If you decide, on your own or in consultation with your colleagues, that a given patient warrants management as a case of suspected VHF, you must immediately take steps to protect yourself and others from contact with the patient, notably the patient’s blood and secretions. This means gown, mask and gloves (preferably a double layer of each) and goggles, spectacles or a visor. The laboratory must be alerted before any specimens are dispatched and the specimens must be protectively wrapped and clearly labeled as Viral Haemorrhagic Fever. Initially you will send a specimen for FBC, diff, smear, platelets, INR and PTT as well as a specimen (3 Plain tubes) to go to the National Institute for Communicable Diseases (NICD) in Gauteng for the definitive diagnostic tests. If the patient requires a transfusion, uncrossmatched O-negative blood must be given, as the Blood Transfusion Service does not have the facility to do cross matches with the appropriate precautionary measures. The patient should be transferred as soon as possible to the designated isolation area in your hospital, which can quickly be brought to a state of readiness by your Nursing Supervisor, pending transfer to the isolation unit at Greys Hospital.
(Umgungundlovu District) once the diagnosis of a lethal communicable disease has been confirmed. The decision has been taken, as a matter of policy, that all cases of confirmed Viral Haemorrhagic Fever in the Umgungundlovu District, and currently in Area 3 (the Greys Hospital Tertiary Drainage Area) will be admitted and managed in a specially prepared isolation unit at Greys Hospital. Other people who should be informed immediately are your Manager on call and your Consultant on call.

The serum which is sent to Gauteng is set up against virus antigens to detect specific antibodies. The facility now also exists for testing the specimen by PCR for VHF DNA. If this test is negative it usually means that the diagnosis is excluded, but sometimes the results of the inoculation of the patient's serum into a cell culture and/or into baby mice may have to be awaited. The decision will depend on consultation between clinicians on site and the virologists. Nowadays it is usually possible to confirm or exclude the diagnosis in 24 to 48 hours, but it may occasionally be necessary to wait up to a week.

Remember that these conditions are notifiable!

**Mortality**

If a patient with suspected or confirmed VHF dies, you must immediately take a percutaneous liver biopsy to be sent to the NICD for tests. You should take two cores, putting one into formalin and the other into normal saline (which should not be of a variety which contains a preservative). It is only necessary to take a specimen of blood at this stage if the patient dies before the initial blood specimen has been taken. The body is then wiped with a hypochlorite solution and wrapped in a triple layer of body bags before being taken away. Guidelines for disposing of the body of a patient who has died of a lethal communicable disease are very strict and need to be followed in all cases.

**SARS and Bird Flu**

There are two other diseases for which we now need to be prepared, and they are severe acute respiratory syndrome (SARS), a potentially lethal, highly infectious form of viral pneumonia, caused by a novel coronavirus, and Asian “bird flu”, which may develop as a new pandemic at any time. Patients with these conditions present to hospitals like any other patients with community-acquired pneumonia. There is nothing pathognomonic about the clinical presentation. So the decision to suspect the diagnosis and to take appropriate isolatory precautions rests with a well-informed clinician with a high index of suspicion and the ability to take a careful history. The diagnosis is to be suspected if a patient who has recently arrived from an area where there is an outbreak of the disease becomes ill with symptoms of community acquired pneumonia. Again, once a decision is taken to manage a case as one of suspected SARS or bird flu, stringent infection control measures must be implemented immediately, and that means immediately.

**Risk to Health Workers**

To give an idea of how contagious these viruses can sometimes be, one of the secondary cases that occurred during the Congo Fever episode at Tygerberg Hospital in 1988 was an
infection in a matron who had never been into the patient room; she had only spent some time in the ante-room. It was also determined that some of the secondary cases of SARS that occurred in hospitals in the East during the outbreak in 2003 were acquired by people who had done nothing more than walk through a corridor where a patient with SARS had been conveyed on a stretcher hours before. The spread of the disease among guests at a Hong Kong hotel occurred through the hotel’s air conditioning system.

If a disaster such as that which befell the unfortunate doctor who died of secondary Congo fever at Tygerberg hospital is to be avoided, all of us ought to become as well informed as we can about these dangerous diseases. It must be emphasised that the epidemiology and even the clinical spectrum of the diseases are not yet well understood. It must also be emphasised that a number of patients who do not have VHF, SARS or “bird flu” are going to be managed in less than ideal circumstances as a result of the implementation of the measures outlined above, and every effort must be made to see that this does not detract from the standard of care that they receive.

Better safe than sorry!

Dr FJ Muller FRCPC, FCP (SA)
Chief Physician
Department of Medicine
Pietermaritzburg Hospital Complex

References: