Mycobacterial infections associated with heater cooler units used in cardiac surgery

General Practitioner Information

Key points

- Heater cooler units are medical devices that keep blood and fluids at the correct temperature during surgery on the heart or aorta.
- Water from the tanks of heater cooler units used in cardiac surgery at some health services in Australia and around the world have been found to be contaminated with *Mycobacterium chimaera*.
- Patients may have been exposed to the aerosolised exhaust from these devices during their surgery.
- There is a very small risk that a patient may develop an infection associated with this exposure up to five years post-surgery.
- A small number of cases of serious *Mycobacterium chimaera* infections have been reported in the United States, the UK/Europe and Australia. One case has been reported in Victoria.
- For patients where infection is suspected and either no clinical source of infection is evident, or an infection involving the cardiac surgical site or prosthesis is suspected, call the hospital where the surgery was performed to speak with an infectious diseases physician, clinical microbiologist or registrar.
- **There is no screening test for *Mycobacterium chimaera* and no indication for testing of asymptomatic patients.**

Update

Public health services and private hospitals providing cardiac surgery have identified possible at risk patients in Victoria. Patients most at risk are those that have had open cardiac procedures where prosthetic devices or materials have been implanted, such as cardiac valves.

During February 2017, Victorian patients were sent letters from the hospital that performed the surgery to advise of the risk and symptoms of infection. The letter advises patients to contact the hospital if they have any concerns and for additional information to go to the Department of Health and Human Services Better Health Channel website (www.betterhealth.vic.gov.au).

All health services with heater cooler units are continuing to test these devices every three months for the presence of *Mycobacterium chimaera*. Where contaminated devices have been found, these have been immediately taken out of service and either returned to the manufacturer for deep disinfection and decontamination or replaced with a new unit.

Understandably some patients may wish to see their GP to request further information and/or assessment of symptoms.

What is *Mycobacterium chimaera*?

Mycobacterium chimaera is a type of bacterium known as non-tuberculous mycobacteria (NTM). These are commonly found in the environment, including soil and water. NTM[i] are generally not harmful although in very rare cases they can cause infection in surgical patients, especially in people with weakened immune systems.

The symptoms of *Mycobacterium chimaera* infection are non-specific. Patients have been advised to seek medical advice if they have the following symptoms

- prolonged fever
- unexplained fever
- night sweats
- unintentional weight loss
- pain, redness, heat or pus around the surgical site.
- increased shortness of breath
- joint or muscle pain
- nausea, vomiting or abdominal pain
- marked fatigue

What should I do if I suspect a case?

Patients should be assessed for the possibility of other diagnoses and other sources of infection. More common causes of the above symptoms, such as prosthetic valve endocarditis caused by other organisms, which occur at a rate of 1-3% in the first year after surgery and 3-6% over five years, should be considered and investigated. Where required, seek specialist advice.

For patients where infection is suspected and either no clinical source is evident, or involvement of the cardiac surgical site or prosthesis is suspected, specialist advice may be required from an infectious diseases physician, clinical microbiologist or registrar.

The diagnosis of NTM infections requires specialised microbiological techniques, including mycobacterial blood cultures, imaging of prosthetic material and other regions as indicated clinically and biopsies of potential sites of infection. An infectious diseases physician, clinical microbiologist or registrar at the hospital where the surgery was performed is best placed to arrange testing if it is indicated and to advise you regarding ongoing patient management.

Should I test an asymptomatic patient?

There is no screening test for *Mycobacterium chimaera* and no indication for testing of asymptomatic patients.

How is *Mycobacterium chimaera* infection treated?

Treatment of *Mycobacterium chimaera* involves a combination antimicrobial regimen similar to anti-tuberculosis therapy. The treatment duration is usually prolonged and requires close clinical supervision.

Following initiation of combination antimicrobial therapy, surgical reduction of the infectious burden may be undertaken, followed by ongoing long-term combination antimicrobial therapy.

Further information

Guidance for health services https://www2.health.vic.gov.au/hospitals-and-health-services/quality-safety-service/infection-prevention/healthcare-associated-infection

Consumer information https://www.betterhealth.vic.gov.au/health/conditionsandtreatments/infection-risk-cardiac-surgery-and-mycobacteria

National safety alert information and updates from the Therapeutic Goods Administration https://www.tga.gov.au/alert/infections-associated-heater-cooler-devices

Background and overview –

Stewardson AJ, Stuart RL, Cheng AC, Johnson PD. *Mycobacterium chimaera* and cardiac surgery. *Medical Journal of Australia*, 2017: 206(3), 132-135.

[i] www.betterhealth.vic.gov.au/health/conditionsandtreatments/Nontuberculous-mycobacteria-lung-disease