Government of Western Australia
Department of Health

Mycobacterium chimaera contamination of heater cooler devices used in cardiac bypass surgery

Information for Medical Practitioners

Key Points

- There is a potential risk for patients who have had cardiac bypass surgery to develop Mycobacterium chimaera infection as a result of the use of heater cooler devices (HCDs) used during surgery.
- There have been less than 100 patients worldwide who have developed M.chimaera infection following procedures mainly involving insertion of prosthetic material (prosthetic graft or valve replacement surgery) associated with HCDs.
- As of 21 February 2017, there have been three patients identified in Australia who have developed this infection (1 in Queensland and 2 in New South Wales).
- All patients in WA who have had high risk procedures performed at Fiona Stanley, Fremantle, Princess Margaret, Royal Perth, the Mount and St John of God Subiaco hospitals are to be notified by letter to raise awareness of this rare but serious complication.
- Further information can be found at http://www.health.wa.gov.au/infectiousdiseases

Mycobacterium chimaera, one of the non-tuberculous mycobacteria (NTM), is a slow growing environmental organism. It is usually of low pathogenicity and is an occasional cause of pulmonary infection in immune-compromised patients.

HCDs are used to regulate the temperature of the patient's blood during cardiac bypass surgery. The transmission route from the HCD to the patient appears to be linked to biofilm that develops inside the HCDs water reservoir, allowing growth of environmental bacteria such as M. chimaera. Microorganisms are subsequently aerosolised into the theatre environment by the unit's fan during use.

Contaminated machines were identified in all Australian states and territories where cardiothoracic surgery is carried out. In WA, 11 of 15 HCDs in use in six hospitals tested positive for M. chimaera and contaminated machines were either disinfected or replaced with new HCDs. There have been no reports of any patients in WA developing M.chimaera infection from contaminated HCDs.

Available information indicates that infections are almost always associated with surgery involving the insertion of some form of prosthetic material e.g. heart valves or aortic grafts. Patients who have had cardiac procedures without any prosthetic implants appear to be at an extremely low risk. The time to diagnosis can be up to 5 years following exposure to this organism, although the median time to symptoms in the identified cases from overseas is approximately 18 months.

Symptoms of M. chimaera infection are non-specific and may include unexplained fever, unexplained weight loss, night sweats, increasing shortness of breath, joint or muscle pain, nausea, vomiting or abdominal pains, pain, redness, heat or pus at the surgical site. Patients with a history of cardiac surgery who present with this symptom complex should be investigated for more common causes other than M.chimaera infection before referral and specialised testing for mycobacterial infection is considered.

Management of M.chimaera infections requires an interdisciplinary approach and is best managed and coordinated by a clinical microbiologist or infectious diseases physician. There is no antimicrobial prophylaxis treatment for patients potentially exposed.

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