Nosocomial transmission of Listeria monocytogenes

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Background: Listeria monocytogenes (LM), a ubiquitous pathogen usually transmitted in food, can have a fatal course in the immunocompromised host. Healthcare-associated transmission has also been reported through patient-to-patient transmission, contaminated resuscitation equipment, and the contaminated hands of medical personnel. Sources of hospital-acquired listeriosis outbreaks can be difficult to identify because of its long incubation period (3-70 days). We investigated a listeriosis cluster in the Haematology Oncology Ward of a Tertiary Hospital.

Material/methods: A cluster of two concurrent cases of bacteraemic listeriosis was identified. Blood isolates underwent molecular serotyping (Doumith et al., 2004) and Pulsed Field Gel Electrophoresis (PFGE). Detailed food intake history of patients was obtained. Samples (food, surfaces, utensils and processing appliances) taken from the hospital’s kitchen and canteen which hold distinct food processing areas were sent to the Central Public Health Laboratory and private certified laboratories for microbiological testing. Food processing and distributing protocols were audited. Rectal swabs from the index cases and all concurrent patients of the ward who were admitted prior to the cluster, as well as personnel’s stethoscopes were cultured for LM (Listeria Selective Enrichment Broth, Fraser broth-Oxoid, and Listeria Selective Agar, Aloa-Oxoid).

Results:

Patients: Patients A and B (71 and 70 year old males) developed on the same day fever without other symptoms. From promptly obtained blood cultures, LM was recovered on the same day (aerobic and anaerobic bottles) and two days later (anaerobic bottle), respectively. Patients occupied adjacent beds in a 4bed room and were on their 38th and 14th hospital day for urinary bladder cancer/chronic kidney disease and colon carcinoma/hepatic metastasis cancer, respectively. Following the recovery of LM
they were cohorted in a double room and contact precautions were undertaken. Patients were treated with ampicillin and recovered uneventfully from LM infection. Patient A died of his underlying disease (64th hospital day); Patient B was discharged to home (31th hospital day).

Epidemiological investigation results: No diarrhea cases were detected in the ward during the previous month. Detailed questioning revealed that both patients consumed hospital's diet (Patient A, for renal and heart, Patient B, for liver disease) as well as cooked vanilla cream from the hospital’s canteen. Patient B was also eating home-cooked egg whites. All samples (food, environmental, rectal and stethoscope swabs) tested negative for LM. PCR serotyping classified both isolates in group 1 serotypes, 1/2a,3a. PGFE revealed identical genotypes indicating a common source. No other cases were diagnosed within the next six weeks.

**Conclusions:** Identical isolates of LM proven by PGFE underscore the common source of this listeriosis cluster in a haemato/oncology unit. Nosocomial outbreaks of LM can cause significant morbidity and mortality in immunocompromised patients. Although a food or environmental source was suspected, no one was demonstrated despite the extensive epidemiological investigation.