

Hospital acquired invasive group A streptococcus infections

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Streptococcus pyogenes (Lancefield group A streptococci (GAS)) is a common human pathogen which causes a variety of diseases with a great difference in severity.^[1] The most common manifestation of *S. pyogenes* infection is pharyngitis, but invasive disease can be seen also.^[2] Invasive group A streptococcal disease (iGAS) is defined as an infection associated with the isolation of *S. pyogenes* from a normally sterile body site. *S. pyogenes* is serologically classified according to the identification of T and M cell wall protein antigens.^[3] The M protein (emm type) is a major virulence factor of *S. pyogenes* and different clinical manifestations were related to particular M/emm types.^[1,2] Therefore in epidemiological studies of iGAS, the organisms were classified by M/emm type. There are more than 120 different M/emm types of *S. pyogenes* and many of them are capable of causing severe disease.^[2,3]

Person-to-person spread of *S. pyogenes* occurs from an infected person by respiratory droplets or by direct contact with secretions of the nose or throat or by contact with infected wounds on the skin. People are infectious when they are ill, but transmission from asymptomatic carriers is also possible.^[4,5] Other patients, family members, healthcare workers (HCWs) and the environment could be the source of the organism. In hospitals, outbreaks affecting multiple patients can occur. When a cluster of GAS cases has been identified, in order to prevent further cases measures should be taken immediately.^[5]

Mathur *et al.* in this issue present an outbreak of *Streptococcus pyogenes* emm type 58 in a high dependency unit of a level-1 trauma center of India.^[6] The authors

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observed four cases of invasive GAS infections in a 28-bedded poly-trauma ward of a level-1 trauma care center in October, 2012. An intensive surveillance and institution of prompt treatment were performed in order to control the outbreak. GAS strains were isolated from blood culture and multiple sites in two patients, tracheal aspirate in one patient and central line tip in another patient. As in one patient the isolate was obtained from central line tip, they suggested that there should be a definite break in infection control measures in the unit.

Sequence analysis of emm gene and profiling of exotoxin production was done to identify the similarity and virulence of the strains. PCR was done for detection of exotoxins *speA*, *speB*, *speC*, *speF*, *speG*, *speI*, *speH*, *speL*, *speJ*, *speM*, *smeZ* and *ssa* revealed that all the isolates of GAS obtained from the different sources produced *speB*, *speC*, *speG*, *speF* and *smeZ*. A sequence analysis of the emm gene was performed and all isolates were found to be GAS emm type 58.

The authors declared that for source investigation a total of 146 samples were taken. Of these, 48 were throat swabs of nursing staff in all the shifts, 4 were throat swabs of the house keeping staff, 16 were throat swabs/tracheal aspirates of other admitted patients, five were throat swabs of various attendants of the patients and 73 were environmental samples of various devices/surfaces in the wards. From these 146 samples, GAS

were isolated the ventilator tubing of a patient and the tracheal aspirate and the tip of the suction tubing of another patient. GAS was not isolated from any of the health care workers (HCWs).

The major limitation of this study was the source of the outbreak could not be determined. Another important limitation was inadequate screening of the HCWs. The physicians who were taking care of these patients were not screened. It is well known that an asymptomatic staff carrier can be identified in most of outbreaks.^[7] Because of the number of reported cases of staff-to-patient transmission of GAS, screening all of the HCWs epidemiologically linked to affected patients is an essential part of outbreak investigation.^[8]

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