



Pathology & Biology Section – 2005

G30 Risk Factor Analysis and Characteristics in Community Acquired MRSA

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The goal of this presentation is to increase awareness of community acquired methicillin resistant *Staphylococcus aureus* (MRSA) infections, and its shift in epidemiology. It is relevant to the medicolegal and public health fields to identify such cases, especially in younger individuals, as it is a reportable disease and a cause of sudden death.

This presentation will impact the forensic community and/or humanity by identifying the risk factors for community acquired MRSA infection in patients without underlying chronic illness, and discussing different and atypical presentations, so that the forensic community can better recognize MRSA in individuals who acquire the agent outside of a hospital setting.

The focus of this case report is patient J.V., a 28-year-old Puerto Rican man who presented to the Emergency Department with a two day history of increasing shortness of breath, chest pain, and bloody sputum. His past medical history was significant for previous herpes infection, and a right thigh abscess that was drained two weeks prior to admission. The patient's social history was significant for incarceration for 5 years (he was released one year prior to admission) and being a smoker. The patient denied intravenous drug use, and maintained a negative HIV status. J.V.'s hospital course initially manifested as a pulmonary process (consistent with necrotizing pneumonia), with an almost complete opacification of the left lung on chest x-ray. On the third day of admission, J.V. deteriorated with septicemia, shock, acidosis, anuric renal failure, disseminated intravascular coagulopathy, paralysis, and a purpuric rash involving his face, anterior chest, right arm, lower extremities, and back. Blood cultures revealed gram positive cocci in pairs and clusters, consistent with the organism *Staphylococcus aureus*. Histologic findings at autopsy revealed extensive bilateral acute pneumonia with multiple pulmonary infarctions, hemorrhage, and necrotizing vasculitis.

The patient had a rapidly progressive course (6 days) of methicillin resistant *Staphylococcus aureus* infection, with no known underlying chronic illness or health-care associated risks factors such as recent hospitalization, recent outpatient visit, recent antibiotic exposure, chronic illness, diabetes, or malignancy. Therefore, by exclusion, this is a case of community acquired MRSA. However, the severity and very rapid progression of the infection, which led to his death, raises the question of the possibility of other risk factors, such as intravenous drug use, underlying HIV infection, or contact with a person or persons with the above-stated risk factors. There is also an associated chance of increased MRSA transmission in certain community clusters such as in correctional facilities, athletic teams, and nursing homes (JAMA, 2003). Such populations have a higher incidence of sharing common personal objects or facilities that would make transmission of MRSA (especially via cutaneous and respiratory inoculation) more common. The patient's history of five years of incarceration places him within this risk category.

MRSA was first acquired outside of a hospital setting in the 1980s when intravenous drug users in Detroit were reported to have a MRSA bacteremia, according to Collins *et al.* (*Medical Journal of Australia*, 2002). Currently, the Centers for Disease Control (CDC) is conducting an active population-based surveillance for community acquired MRSA (CA-MRSA) in selected regions of the U.S. to help characterize the incidence and risk factors for MRSA in the community (JAMA, 2003). Iyer *et al.* have studied local outbreaks of CA-MRSA, specifically related to cutaneous presentations, with the finding that cutaneous abscesses were the most common presentation, (*J Am Acad Dermatol*, 2004). This finding is pertinent to the patient presenting with a cutaneous abscess on his thigh 2 weeks prior to his pulmonary symptoms.

In conclusion, J.V.'s clinical picture and autopsy findings demonstrate a case of CA-MRSA. MRSA is now emerging as a community based agent, and with its varied presentations, such as cutaneous abscesses, shock, and pneumonia, clinicians and pathologists need to include MRSA in the differential diagnosis.

MRSA, Risk Factors, Community Acquired Disease