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Case Report

A CASE OF COMMUNITY ACQUIRED METHICILLIN SENSITIVE STAPHYLOCOCCAL SEPTICEMIA WITH MULTI SYSTEM INVOLVEMENT

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ABSTRACT
Staphylococcus aureus (SA) is a known commensal in healthy individuals and remains a common cause of bloodstream infections of community onset. Bacteremia caused by *Staphylococcus aureus* continues to be a common problem worldwide. Staphylococcal septicemia can present with widespread disseminated infection. We report a case of disseminated staphylococcal infection, purely community acquired, who presented with multiple abscesses, pericardial effusion and vascular complications like peripheral emboli. The patient was treated successfully and followed up with no complications at the end of three months.

Keywords: *Staphylococcus aureus, Bacteremia, Septicemia, Abscesses, Pericardial Effusion*

INTRODUCTION
S. aureus remains a common cause of bloodstream infections of community onset. Bacteremia caused by *Staphylococcus aureus* continues to be a common problem worldwide. In the pre antibiotic era, most cases occurred in young patients without any underlying disease. The associated death rate was 82% (Waldvogel *et al.,* 2000). Even with antimicrobial drug treatment, death rates remain high; Antimicrobial drug resistance in *S. aureus* arose early after the development of antimicrobial agents and continues to evolve. Many of these infections are healthcare associated and thus are potentially preventable. Some of these infections may be caused by hospital strains carried into the community by patients or healthcare workers, but others are caused by true community strains in patients who have had no recent healthcare contact (Collignon *et al.,* 1998). We report a case of staphylococcal sepsis, purely community acquired, who presented with multiple abscesses, pericardial effusion and vascular complications like peripheral emboli. Uncontrolled diabetes was the only detected predisposing medical condition. The patient was treated successfully with incision and drainage of soft-tissue abscesses, pericardiocentesis and intravenous antibiotic for six weeks.

CASES
57 year old male known diabetic for the past 15 years came with history of decreased urine output, generalized edema and dyspnoea on exertion for the past 20 days. He also gives history of fever with chills and rigors for the past 6 months. He was treated as recurrent urinary tract infections (UTI) with multiple antibiotics for the last 6 months. Patient also underwent transurethral resection of prostate (TURP) for recurrent UTI four months back.

On admission complete blood counts (CBC) showed high total counts with neutrophilic leucocytosis, normocytic normochromic anemia and raised erythrocyte sedimentation rate (ESR). Urine routine showed nephrotic range of proteinuria (Urine Protein Creatinine Ratio- 5.8) with plenty of RBC'S and pus cells. The proteinuria was probably due to diabetic nephropathy. He also had proliferative diabetic retinopathy with laser burns. His Renal and liver function tests were normal. Blood culture also grew methicillin sensitive Staphylococcus aureus (MSSA). Ultrasound abdomen showed right sided perinephric abscess which was confirmed by CT abdomen. Ultrasound guided aspiration of the abscess was done, whose culture also grew S. aureus. Follow up ultrasound was done that showed hypoechoic lesion in the spleen suggestive of evolving abscess.

After admission patient developed multiple erythematous lesions in both feet which were typical of septic emboli. Ultrasound Doppler of both lower limbs also suggested the same as there were no significant stenosis.

Serum protein electrophoresis was done to rule out multiple myeloma. Electrophoresis was suggestive of chronic inflammation with absence of M band. Antinuclear antibody profile, C3, C4 levels were done which were negative.

Echocardiogram done on admission was normal. Subsequently patient developed breathing difficulty and a repeat echocardiogram was done which showed pericardial effusion with cardiac tamponade. An urgent pericardiocentesis was done. About 300 ml of hemorrhagic fluid was drained. The aspirated fluid on analysis showed increase in cell counts with 95% of neutrophils suggestive of infective etiology. However Culture of the fluid did not grow any micro organism and can be due to prior antibiotic therapy. Patient had recurrent accumulation of the pericardial fluid and so a pig tail catheter was placed in situ. Later effusion reduced and the catheter was removed. Trans esophageal echocardiogram showed no vegetations.

Patient had persistent leucocytosis for which repeated peripheral smear was done. All showed hypersegmented neutrophils with toxic granulations suggestive of sepsis. Bone marrow analysis was also done which showed trilineage hematopoiesis with mild plasmacytosis. There was no evidence of hematological malignancy.

Patient developed bilateral knee effusion. Aspiration of the fluid showed normal cell count. Culture of the fluid was sterile suggestive of reactive effusion.

The patient was treated with prolonged antibiotics for 6 weeks with linezolid and cloxacillin. Patient developed thrombocytopenia as a complication of linezolid therapy which corrected after the drug was stopped. Repeat blood culture was sterile, all abscesses were resolved.

DISCUSSION

Staphylococcus aureus (SA) is a commensal in 11 to 32 percent of healthy individuals and 25 percent of hospital personnel (Wenzel and Perl, 1995). Persistently colonized persons are at an increased risk of SA infection and risk is further increased by diabetes, intravenous drug use, haemodialysis as well as other immuno compromised states including HIV (Belkum *et al.,* 2009). Skin and related SA infections are responsible for 17 percent of cases with 14 percent 30-day mortality (Turnidge *et al.,* 2009). The incidence of staphylococcal endocarditis as a cause of staphylococcal sepsis is less than 5 percent but 30 day mortality is as high as 11.8 to 23.9 percent (Turnidge *et al.,* 2009).

Staphylococcus aureus Bacteremia (SAB) and SA bacteriuria (SABU) can occur in patients following indwelling urinary catheterization (IDUC) and urologic surgery. Up to 19.5 percent, patients can develop concurrent SAB and SABU without IDUC and more likely to have Methicillin sensitive *Staphylococcus aureus(* MSSA) with community onset (Pulcini *et al.,* 2009) as in our patient. Persistent SAB is associated with bacterial endocarditis (BE) in complicated SAB (Pulcini *et al.,* 2009). Our patient however did not have endocarditis, but had pericardial effusion which is less common than endocarditis.

Staphylococcal septicemia can present with widespread disseminated infection. Multiple mechanisms are involved in interaction of SA with various body tissues, including native and undamaged heart valves, bones, joints, and other solid organs. These interactions allow SA to seed from blood stream to other tissues thereby causing disseminated infection. Staphylococci adhere to vascular endothelium and bind through adhesion receptor interaction (Tompkins *et al.,* 1990). A number of different adhesion molecules, including microbial surface component recognizing adhesive matrix molecules (MSCRAMM) such as protein A, clumping factor A (ClfA), fibronectin-binding proteins A (FnBPA), and fibronectin-binding protein B (FnBPB), allow SA to interact and invade human endothelium (Vercelotti *et al.,* 1984). Our patient presented with septicemia caused by *S. aureus*, with a clinical and radiological diagnosis of disseminated infection. Findings of multiple abscesses, pericardial effusion and septic emboli clearly demonstrated widespread staphylococcal infection with bacteriological diagnoses of *S. aureus* etiology.

Our patient had been followed up regularly and had no complication at the end of the three months

Conclusion

Staphylococcus aureus infection is an important cause of disseminated infection with multisystem involvement. It can either be health care associated or of community acquired. Early diagnosis and prompt initiation of sensitive antimicrobial agent can avoid mortality & morbidity in these patients.

REFERENCES

Collignon P, Gosbell I, Vickery A, Nimmo G, Stylianopoulos T and Gottlieb T (1998). Community-acquired methicillin-resistant *Staphylococcus aureus* in Australia. *The Lancet* **352**(9122) 145-146.

Pulcini C, Matta M, Mondain V *et al.*, (2009). Concomitant *Staphylococcus aureus* bacteriuria is associated with complicated *S. aureus* bacteremia. *Journal of Infection* **59**(4) 240–246.

Tompkins DC, Hatcher VB, Patel D, Orr GA, Higgins LL and Lowy FD (1990). A human endothelial cell membrane protein that binds *Staphylococcus aureus* in vitro. *Journal of Clinical Investigation* **85**(4) 1248–1254.

Turnidge JD, Kotsanas D, Munckhof W *et al.*, (2009). *Staphylococcus aureus* bacteraemia: a major cause of mortality in Australia and New Zealand. *Medical Journal of Australia* **191**(7) 368–373.

Van Belkum, Verkalk NJ, De Vogel CP *et al.*, (2009). Reclassification of *Staphylococcus aureus* nasal carriage types. *Journal of Infectious Diseases* **199**(12) 1820–1826.

Vercelotti GM, Lussenhop D and Peterson PK (1984). Bacterial adherence to fibronectin and endothelial cells: a possible mechanism for bacterial tissue tropism. *Journal of Laboratory and Clinical Medicine* **103**(1) 34–43.

Waldvogel FA, Mandell GL, Bennett JE and Dolin R (2000). *Staphylococcus aureus* (including staphylococcal toxic shock). In: *Principles and Practice of Infectious Diseases* (Philadelphia: Churchill Livingstone) **2069** 100.

Wenzel RP and Perl TM (1995). The significance of nasal carriage of *Staphylococcus aureus* and the incidence of postoperative wound infection. *Journal of Hospital Infection* **31**(1) 13–24.