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A Triple Threat: Staph Aureus Bacteraemia Leading to Endophthalmitis, Atypical Lung Infection, and Epidural Abscess

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Abstract:- We are presenting a case of 74 years old gentleman who had a robotic cystoprostatectomy with ileal conduit and subsequently developed complicated Staphylococcus bacteraemia. His post operative recovery was slightly delayed due to paralytic ileus. Three days post discharge he represented himself with features of thrombophlebitis of forearm and septic shock requiring admission to intensive care. This was complicated with loss of vision and new onset neurological symptoms including quadriplegia. Subsequent investigations confirmed Staphylococcus bacteraemia leading to atypical lung infection, endophthalmitis and epidural abscess. He required intra-vitreal injection of antibiotics and decompression of epidural abscess twice. He completed a total of 6 weeks of IV antibiotics. Although, his vision and upper limb function have improved, he remains paraplegic. Staphylococcus aureus can cause wide range of infection leading to serious complications in immunocompromised patients. In our case, the only identifiable source of the infection was the patient's peripheral venous cannulation site which is very unusual.

I. INTRODUCTION

Staphylococcus aureus is one of the common pathogens causing blood stream infection in high-risk patients. This pathogen can cause wide variety of infection starting from skin infection to life threatening sepsis. A review in 2012 found that the incidence rate of S. aureus bacteraemia ranges from 20 to 50 cases/100,000 per year with mortality rate ranging from 10% to 30% (Hal et al., 2012). Risk factors for complicated S. aureus bacteraemia include extreme of age, black ethnicity, immunocompromised patients, HIV, patients on haemodialysis, male sex and IV drug user (Tong et al., 2015). We are presenting a case report of a patient who had complicated S. aureus bacteraemia leading to atypical pneumonia, endophthamitis and spinal epidural abscess with the potential source being peripheral cannulation site.

II. CASE SUMMARY

A previously fit and healthy 74 year old gentleman was diagnosed with G3pT1 TCC bladder in June 2023. A Re-TURBT and biopsy later in the year 2023 showed G3pTa with BCG refractory CIS. He underwent Robotic cystoprostatectomy with ileal conduit in June 2024. His post operative recovery was delayed due to paralytic lieus requiring NG tube insertion. Urine leak was excluded by CT abdomen-pelvis at the time. He was discharged from the hospital on 10th postoperative day following complete recovery. Three days following his discharge the gentleman represented with pleuritic chest pain, abdominal pain, fever, hypotension, thrombophlebitis of left forearm at the previous cannulation site. With an initial white cell count of 33.4 and CRP of 480 he was transferred to ITU in a state of septic shock. Preliminary CT Pulmonary angiogram and CT abdomen-pelvis showed bilateral cavitating lung lesion (Figure 1) suggestive of atypical infection likely fungal. Blood culture grew Staphylococcus aureus and fungal PCR was negative. He was started on IV Flucloxacillin as per Microbiology team advice. Subsequently his vision diminished, necessitating an Ophthalmology review for suspicion of endogenous endophthalmitis. A vitreal tap was carried out and intravitreal antibiotic administered. The vitreal tap culture was positive for Staphylococcus aureus. The following day, patient developed new onset neurological symptom which started as weakness of both lower limbs gradually progressing proximally affecting respiratory muscles and upper limb. Following an urgent Neurology review a whole spine MRI was done which revealed epidural abscess extending from C4 to T4 level (Figure 2). As the weakness was rapidly progressing affecting the patient's respiration he underwent thoracic laminectomy and decompression under the spinal surgery team. The patient remained ventilated in ITU postoperatively requiring inotropic support. He was extubated on the 4th postoperative day. A repeat MRI at this point revealed further epidural collection at the level of C5-C6, so he had a further washout under anaesthesia. Following 2 weeks of stay in the ITU he made some clinical progress and was transferred to ward. He had transthoracic echo which ruled out infective endocarditis. He completed a total 6 weeks of IV antibiotics. Over the next 2 weeks, his vision completely recovered with some return of upper limb motor function. However, he remains paraplegic until the time of writing the case report and we are uncertain whether he will make any further progress from this point. The patient remains under the care of a specialist rehabilitation team in a different hospital.

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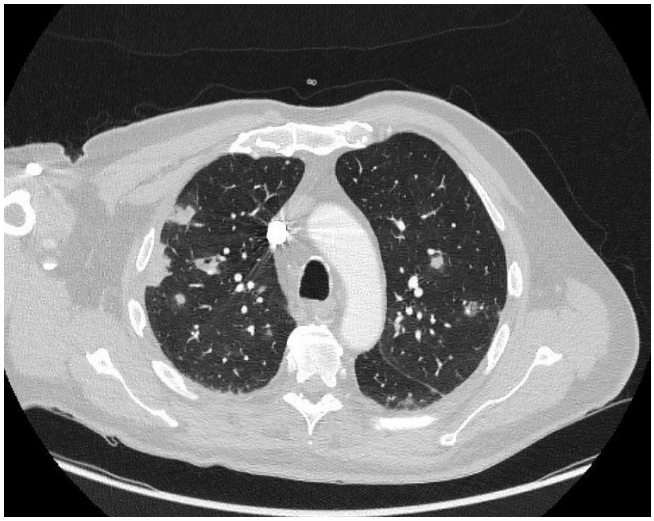

Fig 1 Multiple Cavitating Lung Lesions

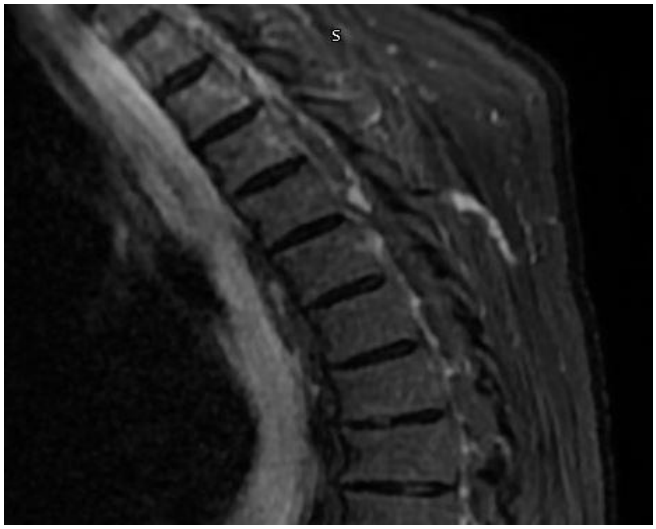

Fig 2 Epidural Abscess

III. DISCUSSION

The incidence of epidural abscess has increased over the last three decades (Darouiche, 2006). This is likely due to increasing use of epidural catheters and availability of more sensitive imaging technique such as MRI. Approximately 60 to 73% of the cases are caused by S. aureus (Huang et al., 2012; Löhr et al., 2005; Reihsaus et al., 2000). Risk factors for S. aureus related epidural abscess include diabetes, IV drug abuse, spinal surgery or trauma and epidural injection or catheter. Interestingly, our patient did not have any of those risk factors. The only identifiable source of the patients' disseminated infection was the peripheral venous cannula with thrombophlebitis. The classic triad of pain, fever and neurological signs in epidural abscess is present only in minority of patients (Davis et al., 2004). As a result, a differential diagnosis of epidural abscess is not often considered. Surgical decompression is the gold standard treatment option for spinal epidural abscess to achieve a good outcome. Due to the risk of permanent neurological damage spinal epidural abscess is a medical and surgical emergency. Thus, it is important to suspect the possibility of an epidural abscess early and carry out investigation to confirm the diagnosis. According to many authors, patients with S. aureus epidural abscess should have urgent decompression within 24 hours (Tong et al., 2015). Along with decompression all patients should have extensive antibiotic therapy for 6 weeks according to guidelines.

IV. SUMMARY

Complicated S. aureus bacteraemia can lead to potential life-threatening situation. Health professionals must be vigilant about the impact it can have on patients. Although S. aureus is a commensal and it is a commonly occurring infection in hospital settings, when it is complicated with dissemination as in our case it can leave a debilitating effect on the patient. Therefore, aggressive treatment, suspicion of all the possible complications and urgent investigation is the key to achieve a good clinical outcome.

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