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Case Report

Paraplegia - Possible sequelae of infected venous access site

Bendigeri M and Paniker GI*

Department of Medicine, Yenepoya Medical College, Yenepoya University, University Road, Mangalore, Karnataka State, India

***Correspondence Info:**
Dr. Georgy Paniker, MD
Assistant Professor,
Department of Medicine, Yenepoya Medical College, Yenepoya University
University Road, Mangalore, Karnataka State, South India 575018
Email: georgy.doc@gmail.com

Abstract

Background: Hospital practices of present day mostly require a peripheral venous access for a patient. Most times improper handling of these access sites results in thrombophlebitis, a reason for febrile spikes.

Findings: We had an interesting case of a young manual labourer treated elsewhere for over a week for fever who presented to us with painful swelling of the right forearm, suggestive of thrombophlebitis. Initial investigations suggested neutrophilic leukocytosis and biochemistry was normal. High grade fever persisted even on third day, developed severe neck tenderness and radicular pain and subsequently he developed acute quadriparesis. The initial blood culture showed *Staphylococcus aureus*. MRI of neck showed an epidural abscess from mid cervical to lumbar level, which was immediately drained and decompressed. With neuro-rehabilitation he regained his upper limb functions partially, but continued to have paraplegia and sphincter disturbances.

Conclusion: *Staphylococcus aureus* is a common skin pathogen and also the commonest organism found on culturing spinal epidural abscess material. The presence of neutrophilic leukocytosis, blood cultures showing growth of *Staphylococcus aureus* and growth of the same organism in the drained abscess when cultured, was supportive. On the basis of supportive laboratory investigations and imaging evidence, we believe that the possible cause for paraplegia in this young man is the infected peripheral venous access site, thrombophlebitis. This study brings to the notice of physicians the catastrophes that could occur due to a infected peripheral venous site and recommend proper care of these. The treating physician should take care of peripheral venous access sites and advise nursing personnel to ensure strict aseptic precautions while creating venous access sites. They should be instructed not to extend the usage of peripheral intravenous cannulas beyond 3 days and to change the same in 24 hours if adequate measures had not been taken as in an emergency. Peripheral venous access sites are to be checked twice daily and hygiene needs to be maintained 48 hours after an i.v. cannula has been removed. Such measures may prevent hazardous complications like a spinal epidural abscess.

Keywords: Paraplegia, immuno-competent, spinal epidural abscess, *Staphylococcus aureus*, MR imaging

1. Introduction

The causes of paraplegia as a result of compressive, non-compressive, demyelinating, infective, inflammatory etiologies are well known to physicians. The possibility of acute paraplegia secondary to an infected venous access site is least thought about. Peripheral venous access is a requirement for investigations and treatment of most patients. Many a times, improper handling of these access sites results in infective thrombophlebitis causing febrile spikes. As per the guidelines of Centers for Disease Control and Prevention emphasis has been placed on using maximal sterile barrier precautions during central venous catheter insertion, using a 2% chlorhexidine preparation for skin antisepsis, avoiding routine replacement of central venous catheters as a strategy to prevent infection and using antiseptic/antibiotic impregnated short -term central venous catheters if the rate of infection is high despite adherence to other strategies.[21] Usual i.v. cannulas under aseptic precautions can be used for 3 days. The integrity of the cannula has to be monitored twice daily. If the cannula is not inserted with adequate aseptic precautions as may occur in an emergency, it has to be removed within 24 hours. After removal of a cannula, there is a high chance of the site being infected for the next 48 hours. This may be prevented by proper means of hygiene.[20] However; some unfortunate patients can develop dangerous sequelae like spinal epidural abscess. We had a case of a young manual laborer treated elsewhere for acute febrile illness who presented to us with painful right forearm swelling suggestive of thrombophlebitis and severe backache and fever. He went on to develop spinal epidural abscess.

2. Case report

25 yrs old manual laborer presented with severe back ache, neck pain and a feeling of tiredness of 1 week duration, who had received treatment elsewhere for fever. Back pain was localized over the lumbo-sacral region which was sharp and non-radiating. Neck pain was predominantly over the lower cervical region, non-radiating at onset and it caused restriction of all neck movements. He was febrile (100^0F), vitals were stable. He had thrombophlebitis of right forearm. Systemic examination was unremarkable.

Figure 1: Showing thrombophlebitis of right forearm

Initial investigations revealed neutrophilic leukocytosis and biochemistry was normal. An initial diagnosis of acute febrile illness was made and he was started on Pipericillin with Tazobactum and Amikacin. His back-pain, neck pain persisted and had worsened as he found an increased difficulty in walking. On third day, he developed complete weakness of both lower limbs which extended to upper limbs within a period of 12 hrs with associated loss of sensations below the neck with bladder involvement.

MRI of spine revealed an epidural collection from the level of C3 to L1 vertebra causing anterior displacement and compression of spinal cord in the lower cervical region.

Figure 2: MRI of spine

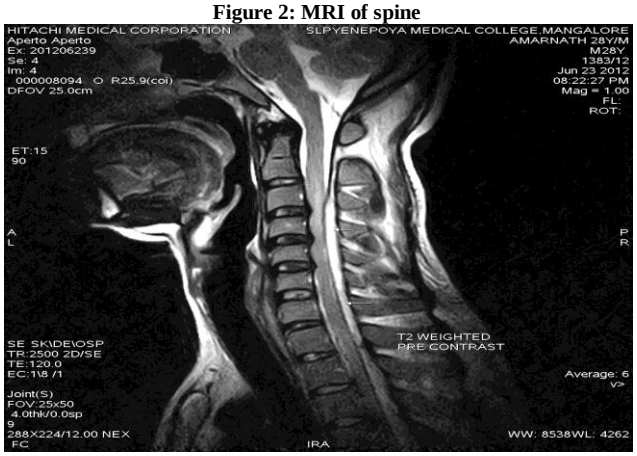

Figure 3: MRI of spine

Patient on the same night, third day of presentation, underwent immediate decompressive neurosurgical intervention at multiple levels. Pus was drained, sent for culture and sensitivity, which revealed growth of *Staphylococcus aureus*. His blood culture also grew *Staphylococcus aureus*. Patient was started on Cloxacillin and Linezolid. Postoperatively over a period of few days he had recovery of his sensations, motor power improved to 2/5 in both upper limbs, but lower limb power and bladder function did not improve. His fever subsided, general condition improved, patient was discharged home after four weeks on oral antibiotics and was advised to continue neuro-rehabilitation. On follow-up his neurologic deficit remained to be the same.

3. Discussion

In spite of advances in medical knowledge and imaging techniques, diagnosis of spinal epidural abscess [SEA] remains a challenging clinical problem which often receives suboptimal treatment.[1] The incidence of SEA in 1 case per 20,000 hospital admissions has doubled over the last two decades owing to the increase in the aging population, increasing use of spinal instrumentation and vascular access.[2] Patients with SEA have one or more predisposing conditions, like Diabetes mellitus, alcoholism, HIV infection or potential local or systemic source of infection (skin or soft tissue infection, osteomyelitis, sepsis, U.T.I., indwelling vascular access).[5] Bacteria gain access to subdural space through direct spread (30%) or hematogenous spread (50%), in rest of cases the source of infection remains obscure. Hematogenous spinal epidural abscesses are primarily located in the posterior aspect of the spinal canal.[6] The direct spread of infection into the epidural space from a source adjacent to the spine such as spondylitis or discitis is located in the anterior aspect of spinal canal.[7,8] In majority of cases *Staphylococcus aureus* is the causative organism, MRSA accounted for about 15% a decade ago and is nearly 40% at present.[2,14,15] Less common causative agents include, *Staphylococcus epidermidis, E.coli, Pseudomonas aeruginosa*.[1]

The presenting symptoms are backache (72%), fever (50%), radicular pain (47%), weakness of an extremity (35%), sensory deficit (23%), bladder or bowel dysfunction (30%), and frank paralysis (21%).[2,12,14,16] The clinical triad of backache, fever and neurological deficit is present only in a minority of patients.[13] The more common, infectious conditions like meningitis, subdural abscess, urinary tract infection, osteomyelitis, sepsis, endocarditis and non infectious conditions like inter-vertebral disc prolapsed, transverse myelitis, spinal artery syndromes and spinal tumors are thought of at initial presentation.[2,11,12] Both MRI with intravenous administration of gadolinium and myelography followed by computed tomography of the spine are highly sensitive (more than 90%) and are the diagnostic investigations of choice.[11,14] Although rare, there is a potential chance of meningitis and of spreading infection to the subdural space. Hence, lumbar puncture is better avoided for fear of spreading bacteria to subarachnoid space.[4,11,12,17]

In spinal epidural abscess the single most important predictor of neurologic outcome is the presentation prior to surgical procedure. Patients who have been paralyzed for more than 24 to 36 hours tend to recover some neurologic function.[4,5,11,12,18,19]

Immediate surgical decompression with appropriate choice of antibiotics remains the optimal therapy.[11] Our patient consumed alcohol occasionally, and had a source of infection in the form of thrombophlebitis leading to SEA. Adequate aseptic precautions along with an earlier diagnosis could have limited the neurologic deficit. Optimal outcome requires well coordinated multidisciplinary care by emergency medicine physicians, hospitalists, internists, infectious disease physicians, neurologists, neurosurgeons, orthopedic surgeons, nurses and physical and occupational therapists. Nursing staff have to be educated on usage of gloves while handling peripheral venous sites. Integrity of the cannulas need to be monitored twice a day and have to be removed if there is any evidence of infection. Such minor, ignored requisites of daily hospital activity may prevent catastrophes as in the subject of our case report.

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