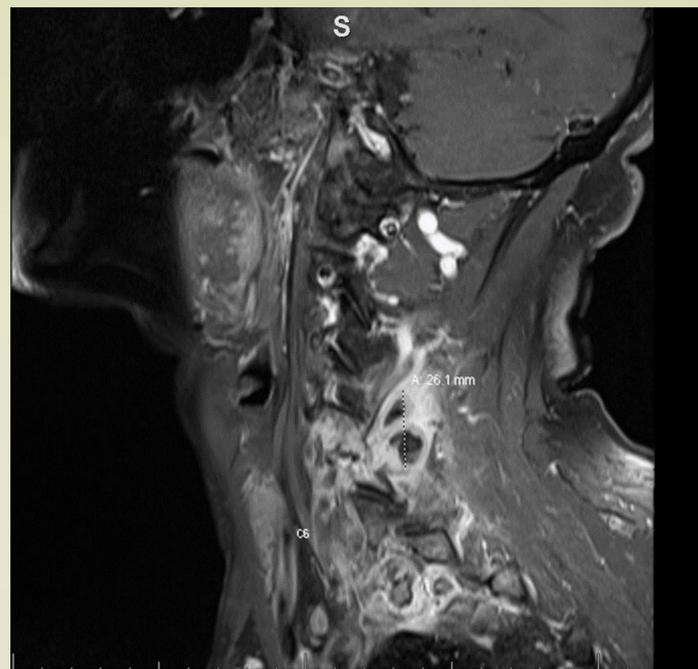


## INTRODUCTION

Cervical spinal epidural abscess and adrenoleukodystrophy are two rare diagnoses that can be difficult to identify. Adrenoleukodystrophy can present with neurological deficits in motor strength and sensation, which can also be found in spinal epidural abscesses. This unfortunately may lead to a misdiagnosis and as a consequence can prove fatal. Therefore, a method to better diagnose these abscesses needs to be identified. In this case report, a pleasant 63 year old male with a past medical history of adrenoleukodystrophy presented with right sided neck pain associated with radiculopathy had associated motor weakness of the right deltoid and biceps muscles. He underwent multiple imaging tests including CT imaging without any findings of spinal epidural abscess. An MRI was finally performed and revealed a 5cm right paraspinal phlegmon from C3-C6 with 2 abscess pockets in the epidural space. ESR and CRP were also found to be elevated. Lessons learned from this case are to identify risk factors, order appropriate labs (such as ESR and CRP) and utilize appropriate diagnostic imaging such as MRI with gadolinium in identifying spinal epidural abscesses.

## CASE PRESENTATION

The patient is a 63 year old male with a past medical history of adult adrenoleukodystrophy, thoracolumbar fusion secondary to cord compression, C3-C5 spondylosis, who presented with neck pain radiating down his right arm for a span of three weeks. He denied any recent trauma or injuries. Due to his chronic history of adrenoleukodystrophy, he was recommended to perform an MRI. He was not able to proceed with the MRI due to claustrophobia. At that point, he was treated conservatively with pain control medication and continued to be monitored. Unfortunately, his neck pain continued to persist. He was evaluated at the emergency department multiple times where he had a CT scan performed and found only spondylitic changes particularly C3-C4. After worsening neck pain, patient finally agreed to have MRI performed which showed 5 cm right paraspinal phlegmon from C3-C6 with 2 abscess pockets in the epidural space. The abscess located at cervical level of C5-C6 was causing severe spinal cord compression and lateral recess compression. No fevers were noted on admission and he had a white blood count of 9.6 and pro-calcitonin less than 0.05. Elevated inflammatory markers of CRP 67 and ESR 75. Physical exam showed strength deficit of 4/5 was noted in the right deltoid and bicep. Patient was evaluated by neurosurgery and recommendation was for drainage of abscess and cervical laminectomy. Patient was started on IV cefazolin 2 g q 8 hours and completed a course of 6 weeks. At the four month follow-up after surgery and physical therapy, he recovered from strength deficit and had no more pain.



Posterior epidural abscess noted in the 26.1 mm localized with two pockets in this MRI.



Irregular shaped measuring 5.0 x 4.1 x 3.3 cm heterogenous abscess located at C5-C6.

## DISCUSSION

Adrenoleukodystrophy is rare genetic disease that can affect children and adults. Clinical manifestations result in lower extremity progressive paresis/weakness, neuropathy of the lower extremity, spasticity and cognitive/behavioral deficits are common [1]. Epidural abscess can insidiously also present with similar symptoms of neurological deficits which makes it difficult for clinicians to diagnose. Spinal epidural abscesses are a rare finding that can be deadly if not treated early. Abscesses can spread to nearby structures and cause nerve compression and vascular damage leading to paraplegia and even death [2]. One study found the classic triad of fever, neurologic deficits, and spine pain were present in only 13% of patient who presented to the emergency department [3]. When our patient presented to the clinic, he did not have any fever or signs of infection. He presented with neck pain and right deltoid / bicep strength deficits, meeting only two out of three triad components. When he presented to the emergency department, he did not have a fever, no leukocytosis and blood cultures were negative. These negative findings made it difficult to identify an abscess was present.

Although in certain disease states ordering an ESR and CRP have low specificity and sensitivity, these markers can actually aid in the diagnosis of epidural abscesses. A prospective study found that implementing ESR and CRP to the screening process for spinal epidural abscess noted a sensitivity and specificity of ESR in spinal epidural abscess patients were 100% and 67%, respectively. This had led to a lower incidence of motor deficits at the time of diagnosis [4]. Ordering ESR and CRP levels may prove helpful in identifying more patients with spinal epidural abscess. Other risk factors for epidural abscess include spinal surgery, IV drug use, and diabetes [2]. Our patient had thoracolumbar fusion surgery two years ago due to a traumatic accident. Having spinal surgery could have been another risk factor for our patient to develop an epidural abscess however due to the acute presentation of pain and location of the epidural abscess in the cervical region it seem less likely that this was the source of infection.

An integral component in accurately diagnosing spinal epidural abscess should include MRI with gadolinium contrast. One case study illustrated this point, when initial non-contrast MRI delayed the identification and treatment of a spinal epidural abscess [5]. Delay in treatment can prove fatal for patients and therefore it is imperative to diagnose epidural abscesses with urgency. Contrast enhanced MRI can show can help differentiate necrotic liquid abscess from phlegmonous granulation tissues. Peripheral enhancement without core enhancement is noted in necrotic liquid abscess tissue whereas phlegmonous tissue will show a more uniform homogenous enhancement [6]. Unfortunately our patient initial visit to the emergency department, only constituted a CT without contrast which led to a misdiagnosis of epidural abscess. It was not until a MRI with contrast was performed that the epidural abscess was identified. MRI with gadolinium showed specificity and sensitivity of 90% for spinal epidural abscess detection [7]. Ordering an MRI with contrast can make a change in treatment decision making when deciding to choose IV antibiotics versus surgical drainage. A necrotic liquid abscess is avascular and therefore IV antibiotics may not be able to penetrate abscess and instead will need to have aggressive surgical debridement [6].

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