

Three cases of medullary arachnoiditis ossificans: A rare condition and comprehensive review

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Background

Arachnoiditis ossificans is a rare medical condition that involves inflammation of the leptomeninges, a thin membrane that covers the brain and spinal cord. This inflammation leads to the formation of calcifications in the dural sac, which is the protective covering that surrounds the spinal cord. The calcifications can cause compression of the spinal cord and nerve roots, leading to a range of symptoms including chronic pain, numbness, weakness, and bowel and bladder dysfunction. The condition can be difficult to diagnose and treat, and may require a combination of medical and surgical interventions to manage symptoms and improve quality of life.

The condition of cervico-thoracic ossifying arachnoiditis is a debilitating and progressive neurological disorder that causes immense pain to the affected individuals. In this study, we aim to shed light on this condition by presenting three cases of patients who underwent surgery at our center. The surgery was aimed at providing relief to the patients from the unbearable pain and preventing further neurological deterioration. The study highlights the clinical presentation, diagnostic workup, and surgical management of these cases, providing valuable

insights into the treatment of cervico-thoracic ossifying arachnoiditis.

As part of our services, we provide a comprehensive review and analysis of the existing scientific literature on the subject matter. This review includes a thorough examination of relevant research studies, academic articles, and other published works that contribute to the current understanding of the topic. Our review aims to provide a comprehensive and accurate assessment of the current state of knowledge on the subject, and to identify any gaps or discrepancies that may exist in the literature. With this information, we can help our patients gain a deeper understanding of the subject and make more informed decisions based on the available evidence.

Materials and methods

In this case study, we are presenting the medical history of a 52-year-old female patient who had suffered from a subarachnoid hemorrhage. Upon further examination, it was discovered that the hemorrhage was caused by a ruptured PICA (Posterior Inferior Cerebellar Artery) aneurysm. Subarachnoid hemorrhage is a serious condition that occurs when there is bleeding

in the area between the brain and the thin tissues that cover the brain. The PICA aneurysm rupture is a rare occurrence and requires immediate medical attention. The patient's condition was closely monitored and treated by a team of medical professionals to ensure a successful recovery. The person mentioned had a medical condition called non-Hodgkin's lymphoma, which is a type of cancer that affects the lymphatic system. To treat this condition, they received a specific type of treatment called intrathecal treatment, which involves delivering medication directly into the spinal canal.

The individual in question experienced the onset of spastic tetraparesis nine years after a previous medical event. Upon further examination through an MRI, it was determined that the cause of the symptoms was cervical arachnoid cysts. As a result, the patient underwent C5-C6 laminoplasty and arachnoidolysis, which is a surgical procedure that removes arachnoid cysts. Although the procedure led to temporary improvement, more long-term treatment options may be necessary.

After experiencing a decline in her condition, the patient underwent a surgical procedure known as C5-C6 laminectomy, neurolysis, and duraplasty. This procedure involved the removal of part of the lamina, a bony structure that covers the spinal cord, in order to relieve pressure on the nerves. Neurolysis was also performed, which involves the removal of scar tissue or adhesions that may be pressing on the nerves. Additionally, duraplasty was carried out, which is a surgical procedure that involves the repair or reinforcement of the dura mater, the protective membrane that covers the spinal cord. The patient is currently in a state of partial recovery from her paraparesis in the lower limbs, and her treatment plan will continue to be monitored closely by medical professionals.

In this particular instance, a male patient aged 68 came in with a D3 arachnoid cyst that did not have any obvious cause. The cyst was located in the arachnoid membrane, which is one of the layers covering the brain and spinal cord. The patient mentioned experiencing reduced muscle strength in his left lower limb, a symptom known as paresis. Additionally, he reported unusual sensations, such as tingling or numbness, in his right lower limb, a condition called paresthesias. Further evaluation was needed to determine the best course of treatment for the patient. During the surgical procedure, a T3, T2, and partial T4 laminectomy was performed to remove a calcified arachnoid. The arachnoid is a delicate membrane that covers the brain and spinal cord. In some cases, it can become calcified, which can cause neurological symptoms. By removing the calcified arachnoid, the patient experienced improvement in their condition.



Figure 1: Sagittal T2 MRI shows thoracic medullary arachnoiditis ossificans.

The patient in question is a 61-year-old woman who recently underwent surgical intervention for a transdural spinal hernia at the level of D7-D8. The hernia had caused a condition called paraparesis, which is a partial paralysis of the lower limbs, and the gradual onset of pain and flaccid tetraparesis, which is a condition characterized by muscle weakness in all four limbs. The surgery was performed to address the underlying cause of these symptoms and to relieve the pressure on the spinal cord. The patient is currently under observation and is expected to make a full recovery in due course.

After the initial surgery, a Flow MRI was conducted, which identified a blockage in the area where the surgery was performed. This blockage caused two conditions to occur, namely myelopathy and syringomyelia. To address these issues, a surgical procedure called a T5-T9 laminectomy was performed. During this procedure, the surgeon removed the laminae (the bony structures that form the back of the spinal canal) at the T5-T9 level to create more space in the spinal canal and relieve pressure on the spinal cord. Additionally, adhesiolysis of the duro-arachnoid-medullary was carried out to reduce any adhesions between the spinal cord and surrounding tissue. Finally, a duraplasty was performed to repair any defects in the dura mater (the outermost layer of the spinal cord).

At the moment, she is being closely monitored by the Pain Unit, a specialized medical team that deals with pain management. It is worth noting that she has undergone a reversal of cervical syringomyelia, a rare condition that affects the spinal cord, and as a result, she has shown significant clinical improvement in terms of her physical strength. This is a promising development and suggests that the treatment she has received so far is effective.

Results

Arachnoiditis ossificans is a rare medical condition that affects the spinal cord and can cause a range of symptoms like chronic pain, numbness, tingling, and weakness in the legs and lower back. It occurs when the arachnoid membrane, which is a thin and delicate layer that covers and protects the spinal cord, becomes inflamed and scarred. Over time, calcium deposits start to form on the scar tissue, leading to the formation of bone-like structures that can impede normal spinal cord function. The condition can be caused by various factors, including the use of intrathecal medication or anesthesia, Subarachnoid Hemorrhage (SAH), infection, tumors, spinal surgery, and contrast-enhanced myelography. In some cases, arachnoiditis ossificans can develop without a clear cause, which is known as idiopathic arachnoiditis ossificans. Since arachnoiditis ossificans is a rare condition, it can be challenging to diagnose. However, imaging tests like MRI, CT, and myelography can help identify the characteristic bone-like growths and rule out other potential causes of the symptoms. Treatment options are limited, and most focus on relieving the symptoms, which may include physical therapy, pain management, and surgery in severe cases. Adhesive arachnoiditis is a chronic, progressive condition that affects the spinal cord's arachnoid membrane. It is usually caused by invasive spinal procedures, infections, or trauma. In the final stages of the disease, patients experience chronic pain, severe neurological dysfunction, and loss of bladder and bowel control. Clinical and radiological evaluation is necessary to diagnose adhesive arachnoiditis. The clinical evaluation may involve physical examination, medical history, and symptom analysis. The radiological evaluation may include Magnetic Resonance Imaging (MRI) and Computed Tomography (CT) scans. Early di-

agnosis and treatment of adhesive arachnoiditis are crucial to prevent further damage and improve the patient's quality of life. Treatment options may include medications, physical therapy, and surgery. The goal of treatment is to manage symptoms, prevent complications, and improve the patient's mobility and functionality.

Conclusion

Arachnoiditis ossificans is a rare condition that causes the inflammation and scarring of the arachnoid membrane that protects the spinal cord. The scarring that occurs can lead to the formation of bone within the membrane, which can compress the spinal cord and nerve roots, causing significant pain

and neurological symptoms. Due to the severity of the condition, its low occurrence rate, and the likelihood of recurrence, it is essential to recognize arachnoiditis ossificans symptoms as early as possible. These symptoms include progressive neurological deterioration, such as muscle weakness, numbness, and tingling sensations. It is crucial to avoid any delays in diagnosis and treatment, as early intervention can help prevent the progression of symptoms and improve the patient's quality of life.