

## Thoracic arachnoiditis, arachnoid cyst and syrinx formation secondary to myelography with Myodil, 30 years previously

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Received: 8 November 2005 / Revised: 8 March 2006 / Accepted: 6 July 2006 / Published online: 31 August 2006  
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**Abstract** Spinal arachnoiditis can rarely occur following irritation from foreign body substances, including certain oil based contrast agents used for myelography. We describe a patient with thoracic arachnoiditis, arachnoid cyst and syringomyelia, 30 years following a myelogram with Myodil. A 62-year-old female presented with chronic thoraco-lumbar back pain, a spastic paraparesis and sphincter disturbance. She had undergone a myelogram with Myodil, 30 years previously for investigation of back pain. A MRI scan revealed evidence of arachnoiditis, thoracic syringomyelia (T6–T8) and an anteriorly placed, extramedullary, arachnoid cyst at T10–T12, compressing the cord. At surgery, T7–T10 thoracic laminectomies were carried out and syringo- and cysto-subarachnoid shunts were inserted. At 12 months follow-up, the sphincter disturbance, lower limb weakness and mobility problems had almost resolved. Although, the use of oil based contrast agents such as Myodil has been discontinued, the present case illustrates some of the rare sequelae of its use, manifesting decades later. Aggressive surgical intervention produced symptomatic benefit.

**Keywords** Thoracic spine · Arachnoid cyst · Syringomyelia · Myodil

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### Introduction

Causes of spinal arachnoiditis include infection, trauma, tumours, surgery and irritation from foreign body substances [3, 4, 9]. The latter include older radiographic contrast agents such as isophendylate (Myodil and pantopaque), which was widely used for myelography in Europe and North America until the 1980s [3, 4, 6]. We describe a 62-year-old lady who presented with thoracic arachnoiditis, arachnoid cyst and syringomyelia, 30 years following myelography-using Myodil.

### Case report

A 62-year-old female presented with a 2 year history of chronic thoraco-lumbar back pain, and a progressive and bilateral lower limb weakness. This was associated with spasms affecting her legs and abnormal sensation on the soles of the feet. There was a 3 month history of urinary and faecal urgency. She was asymptomatic in the upper limbs. She had undergone a Myodil myelogram; 30 years previously as part of investigations for lumbosacral back pain. The myelogram was normal and her symptoms resolved one year later with conservative measures.

On examination, there was spastic paraparesis, with an up going plantar response on the right. There was bilateral weakness of hip flexion (MRC 4, motor power) and she had difficulty walking independently. Light touch, pinprick and temperature sensations were preserved, but proprioception was reduced at the toes bilaterally. Cranial nerves and upper limbs were neurologically intact.

**Fig. 1** Sagittal T1 weighted (a) and T2 weighted (b, c) spin echo MRI scans of the thoracic region, demonstrate an intramedullary lesion from T6–T8 and an anterior extramedullary, intradural lesion at T10–T12. The abnormal areas were low signal on T1 weighted images and high signal on T2 weighted images, in keeping with a syrinx and an arachnoid cyst, respectively



A MRI scan of the thoraco-lumbar region revealed an intramedullary lesion extending from T6–T8 and an anteriorly placed extramedullary, intradural lesion at T10–T12, compressing the thoracic cord (Fig. 1). The abnormal areas were non-enhancing, low signal on T1 weighted images and high signal on T2 weighted images, in keeping with a thoracic syrinx and an arachnoid cyst, respectively (Fig. 1). Axial MRI scans at the lumbar levels revealed clumping of the nerve roots, suggestive of arachnoidal adhesions, although Myodil droplets were not seen (Fig. 2). Plain X-rays of the thoraco-lumbar spine, full blood count and serum inflammatory markers were normal.

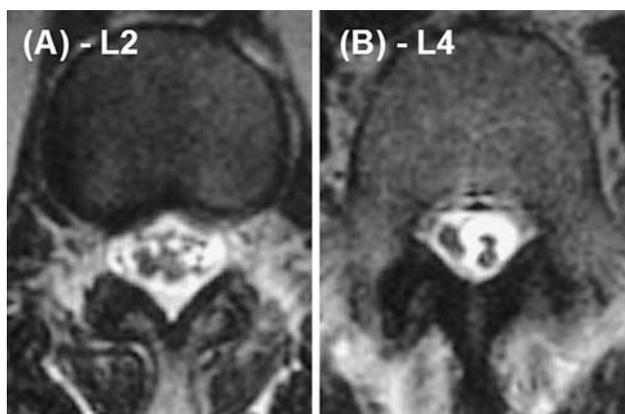
As she was symptomatically deteriorating, surgical exploration was undertaken in the form of a T7–T10

thoracic laminectomies. On opening the dura, dense arachnoidal adhesions were apparent. These were partially released to enter the anteriorly placed arachnoid cyst at T10 (Fig. 3a) and the syrinx cavity at T8 level (Fig. 3b). Fluid similar to cerebro-spinal fluid (CSF) was released under pressure from both the arachnoid cyst and the syrinx. Syringo- and cysto-sub-arachnoid shunts were inserted. Post-operative recovery was uncomplicated and at 12 months follow-up, the sphincter disturbance, lower limb weakness and mobility problems had almost resolved.

## Discussion

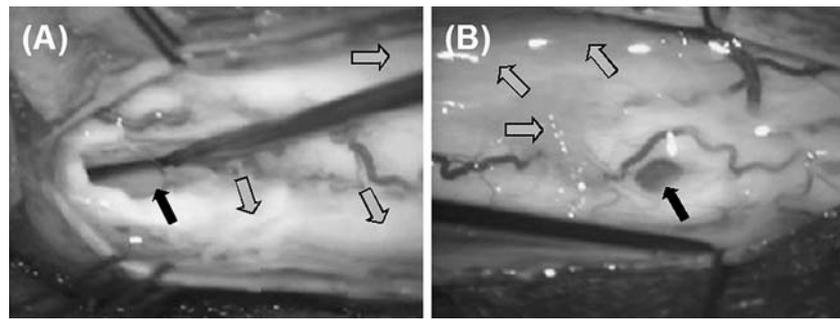
The present case is a rare report of widespread arachnoiditis, with the formation of an arachnoid cyst and syrinx in the thoracic cord (radiologically evident at operation), secondary to the use of Myodil, 30 years previously. Although, we did not observe Myodil droplets on the MRI scans, in the absence of other risk factors, the history of Myodil usage seems the likely contributory agent for the pathological changes noted [3, 4, 6]. Aggressive surgical intervention led to symptomatic benefit.

Spinal arachnoiditis following myelography with certain agents such as isophendylate (Myodil and pantopaque) is a rare (approximately 1%) but a recognised complication [3, 4, 6]. This risk appears to be greater with oil based contrast agents such as isophendylate, than other modern water based agents such as metrizamide (amipaque) and iohexol (omnipaque)



**Fig. 2** Axial T2 weighted spin echo MRI scans at the L2 (a) and L4 (b) levels reveal adhesions and clumping of the lumbar roots

**Fig. 3** Intra-operative view of the thoracic spinal cord under the operating microscope showing, dense arachnoidal adhesions (*grey arrows*), the anteriorly placed arachnoid cyst at T10 level (**a**, *black arrow*) and the syrinx cavity at T8 (**b**, *black arrow*)



[3, 4]. Furthermore, the risk of arachnoiditis is augmented by previous spinal surgery and existing spinal canal stenosis at adjacent levels [3, 4]. However, this was not applicable to our patient.

In the present case there was radiological and operative evidence of not only arachnoiditis, but also an extramedullary arachnoid cyst and intramedullary syrinx formation. There have been rare reports of spinal arachnoiditis, arachnoid cyst and syrinx formation, but this typically followed spinal surgery or trauma [1, 2, 5, 8]. The present case is unusual in that our patient developed the same sequelae, but after myelography with Myodil.

While the precise pathophysiology of these abnormalities is unclear, they may be interrelated. Thus, the arachnoidal adhesions may interfere with CSF flow pathways around the thoracic cord, causing trapping of CSF and the formation of the arachnoid cyst [3]. Moreover, the altered dynamics of CSF flow may also cause a pressure differential, promoting the formation of the syrinx [2, 5]. Although, only a partial release of the dense arachnoidal adhesions was possible in our patient, drainage of the cyst and the syrinx produced symptomatic relief [7].

In the modern era of computed tomography and magnetic resonance imaging, the need for myelography has diminished and the use of isophendylate has been

discontinued. Nevertheless, the present case illustrates some of the rare sequelae of its use in the past, manifesting decades later.

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