Imaging Features of Retained Subdural Pantopaque 28 Years after Myelography

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CASE REPORT

A 58-year-old female was admitted to a local hospital with progressive neurogenic claudication and low back pain of six months duration. Her past history showed L4-L5 disc surgery 28 years before admission.

Lumbar MRI done in that center depicted, besides the evidence of previous surgical intervention at L4-L5 level, a well-defined elliptical mass located at posterior thecal sac at L3 level. The mass was hyperintense on T1-weighted images and had high signal intensity on T2-weighted images resembling the intensity of CSF, but a thin line of signal void between the mass and CSF was present (Figure 1A-C).

The patient was referred to us with diagnosis of intraspinal intradural lipoma. At our institute, plain standing radiographs undertaken for evaluation of bony structures disclosed that the mass could have retained Myodil. Degenerative spondy of L3-L4 possibly responsible for the neurogenic claudication was also demonstrated (Figure 2A,B).

The remaining Myodil was taught to be in the subdural space because it had no longitudinal movement in supine radiographs. Careful history confirmed Myodil myelography 28 years ago that had been done before disc surgery as a part of diagnostic work up.

Surgical intervention was carried out with wide laminectomy and pedicle screw rod construct from L5 to L2 (Figure 3A,B). No attempts for removal of the subdural Myodil via a puncture needle were made.

The patient's neurogenic claudication disappeared and she is quite satisfied on follow up.

DISCUSSION

Iophendylate (Pantopaque or Myodil) is an oil-based positive contrast material that was commonly used in lumbar myelography in the past. Many reports have documented the rare and late complications of intrathecal Iophendylate myelography that are mainly secondary to localized adhesive arachnoiditis (3, 8-10).

There is considerable controversy over the existence of a “subdural space” in the spinal cord. It has been accepted in a cadaver study that true subdural space exists in more than one third of the normal individuals (6). Therefore, the injected Myodil might have inadvertently entered into this space and opened it in an elliptical fashion.

ABSTRACT

AIM: Iophendylate is a fatty acid that was introduced as an oily medium by Steinhausen in 1944 and was commonly used for myelography worldwide until 1980 when it was gradually replaced by water-soluble media. This contrast medium was formerly manufactured under the name of Myodil and was known as Pantopaque in USA.

The late clinical and imaging pictures of Iophendylate myelography have been widely described in the literature. However, the natural history of this contrast medium when inadvertently injected and trapped in subdural space is not fully understood and its MRI features are not described before.

KEY WORDS: Lumbar disc herniation, Myelography, Myodil, Pantopaque
Figure 1: Appearance of signal void in T1 (A), T2 (B) sagittal, and axial (C) images.

Figure 2: Appearance of myodil in plain x-rays.
Myodil trapped in this space usually remains clinically silent and it is believed that it gradually spreads along the nerve roots with the aid of gravity and finally vanishes (7). However the current case suggests that Myodil trapped in the subdural space might remain unchanged for a long period of time.

The easiest way to diagnose intrathecal Myodil is taking a careful history and its demonstration on plain radiographs. Unfortunately, taking MRI proceed plain radiography in many instances.

On MRI, the characteristics of Iophendylate either retained in subarachnoid space or trapped in subdural space are similar and both closely resemble fat (1, 2).

Differentiation of Myodil from a lipoma can be easily done if a plain radiograph is taken, while interpretation of MR imaging without an X-Ray will certainly cause confusion and misdiagnosis (11). On the other hand, intrathecal Myodil can be retained for a period of time if not removed. Therefore, differentiation between intrathecal Myodil and subdurally trapped Myodil becomes an important issue that is not always possible on standard supine MRI. The correct diagnosis between these two can be only made with the use of plain radiographs in different positions and correlating it with the MRI features. The differentiation is easy if the radiographs taken in supine and erect positions are compared to each other. Obviously, the location of the intrathecal subarachnoid retained Myodil is not constant in standing versus supine plain radiographs with respect to the free longitudinal movements of Myodil. The location of this contrast medium trapped in the subdural space is always constant on X-Ray and exactly correlates with its location seen in MRI.

A Myodil cyst, which has been reported in two rare instances, should be noted in differential diagnosis of subdural trapped Myodil. A Myodil cyst is formed from a residual of an intrathecal Iophendylate covered with adhesive arachnoid tissue. Both reported cases had a global shape, and were located posterolaterally off the midline causing radiculopathy in both instances (5, 12). This is in contrast to the current case having an elliptical shape, located posteriorly in the midline and being asymptomatic.

Myodil trapped in the subdural space can be easily removed with a lumbar puncture needle, although the necessity of its removal is questionable.

In conclusion, this report depicts a unique case of posteriorly located subdural trapped Myodil, about three decades after myelography. The clinical picture of this case highlights that such a complication does not carry the risk of arachnoiditis and can remain silent for several decades. Although Iophendylate is not used for evaluation of spinal disease anymore in the modern diagnostic era, its former use and its intrathecal persistence makes its recognition in MR imaging important. The current case emphasizes the necessity of awareness about these rare features which continue to present even decades after abandonment of oil-based myelography.

REFERENCES

Figure 3: Postoperative images showing the implants.


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