Deep venous thrombosis after lumbar disc surgery due to compression of the vena cava caused by a retroperitoneal haematoma

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Abstract The case of a 46-year-old Arabian male complaining of low back pain due to congenital lumbar spinal canal stenosis with additional disc herniation is presented. Following CT scan and MRI, bilateral enlarged partial hemilaminectomy was performed in L5/S1 with removal of herniated disc material. Intraoperatively, no complication was encountered. In the postoperative course, the patient had persistent low back pain and developed deep venous thrombosis in the left leg. Phlebography revealed thrombosis in the deep veins of the left leg extending into the pelvic region. The source of this high obstruction of the venous outflow was a retroperitoneal haematoma, visible on CT scan, compressing the vena cava at the level of L5/S1, the most probable cause of which was accidental perforation of the anterior spinal ligament. This case demonstrates that injury to the retroperitoneal vessels during lumbar disc surgery can also present as deep venous thrombosis due to obstruction of venous outflow.

Keywords Venous thrombosis · Lumbar disc surgery · Complication · Injury to retroperitoneal vessels

Introduction

Lumbar microdiscectomy has a low mortality rate. Injury to the retroperitoneal vessels as a surgical complication

after perforating the ventral annulus fibrosus is reported in the literature [4]. In many cases, this complication shows no retrograde bleeding into the surgical field and manifests with a sudden fall in arterial blood pressure and/or shock requiring emergency management.

In the postoperative course after lumbar discectomy, the rate of deep venous thrombosis is around 2% under prophylaxis with elastic stockings and/or intermittent pneumatic compression [3].

Case report

A 46-year-old Arabian male patient presented in our outpatient clinic with a history of low back pain involving both legs and with sciatic pain for 3 years. In addition, he complained about aggravating pain under strenuous work. The neurological status was normal; especially, no impairment of sensitivity was present. The patient had insulin-dependent diabetes mellitus. Neuro-radiological examination including myelography revealed a congenital spinal stenosis of the lumbar spine, especially at L4/5 and L5/S1 with an additional medial disc herniation in the latter segment. Surgery was performed microsurgically at L5/S1 bilaterally with an enlarged partial hemilaminectomy, removal of the herniated disc fragment and partial discectomy. The intraoperative procedure was uneventful. In the early postoperative course, the patient complained of local back pain, whereas the radiating pain in both legs had disappeared. Since there was no improvement in the low back pain, a CT scan and MRI of L5/S1 was performed. The spinal canal was free and there were no obstructions of the dural sac and the nerve roots. In the retroperitoneal space adjacent to the disc space, a 3 cm large haematoma was

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Fig. 1 Postoperative MRI of L5/S1 revealing retroperitoneal haematoma (*black arrow*) adjacent to the disc space: (**a**) axial and (**b**) sagittal image. No recurrent disc herniation

visible (Fig. 1). At the same time, his left leg was swollen and painful. Clinical inspection and duplex scanning suggested deep venous thrombosis. Phlebography was performed revealing an obstruction in the deep draining veins of the left extending into the iliacal veins, which were compressed by the retroperitoneal

Fig. 2 Postoperative phlebography revealing the extension of the deep venous thrombosis into the pelvic region with the site of obstruction at the retroperitoneal haematoma (*black arrow*)

haematoma (Fig. 2). The patient was immobilised and, under close clinical observation, treated with intravenous heparin for 3 weeks, followed by anticoagulation with phenprocumon. Placement of an IVC filter was taken into consideration, but due to rapid clinical improvement and recanalisation, it was not implanted. Furthermore, a surgical removal of the haematoma was discussed, but the case was treated conservatively for three reasons. First of all, the haematoma was unchanged in size on a follow-up control 2 days after discovery, secondly the venous outflow of the right leg and the deep pelvic organs was not impaired and thirdly the symptomatology of the patient showed a rapid improvement under heparinisation. After 3 weeks, a partial recanalisation had occurred and the patient was mobilised wearing compression stockings and treated with phenprocumon. At discharge, the preoperative low back pain persisted, slightly improved. The sciatica was absent and the neurological status was normal. On a follow-up examination 9 months after surgery, the patient complained of low back pain with intervals of leg pain. The neurological status was unchanged. CT scan and MRI showed no recurrent disc disease or persistent spinal canal stenosis in the surgically treated segment. Therefore, further conservative treatment was prescribed.

Discussion

Serious complications after lumbar discectomy including injuries to the large retroperitoneal vessels usually need emergency management. Perforations of the ventral annulus fibrosus with or without injuries to vessels in the

retroperitoneal space may occur more often, but are not detected if no clinical symptoms are caused. Artery occlusion or injuries to the retroperitoneal vessels have been reported [1, 2, 5]. However, the fact that a deep venous thrombosis can be due to such a less traumatic perforation causing a retroperitoneal haematoma compressing the vena cava has not been reported in literature so far. Deep venous thrombosis extending into the pelvic venous system should therefore be examined in detail for any unusual cause, as in contrast to this case it could be possible that a surgical removal of haematoma may be necessary to prevent a total obstruction of the venous outflow to the lower part of the body.

Conflict of interest statement None of the authors has any potential conflict of interest.

References

1. Akagi S, Yoshida Y, Kato I, Sasai K, Saito T, Imamura A, Ogawa R (1999) External iliac artery occlusion in posterior spinal surgery. *Spine* 24:823–825
2. Dosoglu M, Is M, Pehlivan M, Yildiz KH (2006) Nightmare of lumbar disc surgery: iliac artery injury. *Clin Neurol Neurosurg* 108:174–177
3. Ferree BA, Wright AM (1993) Deep venous thrombosis following posterior lumbar spinal surgery. *Spine* 18:1079–1082
4. Inamasu J, Guiot BH (2006) Vascular injury and complication in neurosurgical spine surgery. *Acta Neurochir (Wien)* 148:375–387
5. Kacem AH, Ben Amar M, Chelli H, Siala I, Frikha I (2006) Arterial injury as a complication of lumbar disc surgery. *Rev Med Liege* 61:804–806