Int J Clin Exp Med 2015;8(4):6342-6345
www.ijcem.com /ISSN:1940-5901/IJCEM0006469

Case Report

Cerebellopontine angle empyema after lumbar disc herniation surgery

Clarissa Gambara Nascimento, Roger Schmidt Brock, Barbara Albuquerque Morais, Wagner Malagó Tavares, Manoel Jacobsen Teixeira, Wellingson Silva Paiva

Division of Neurosurgery at University of Sao Paulo School of Medicine, Sao Paulo, Brazil

Received January 29, 2015; Accepted March 26, 2015; Epub April 15, 2015; Published April 30, 2015

Abstract: Background: Lumbar discectomy is still one of the most common spinal surgeries performed today. Nevertheless, there are few publications considering severe complications. Case Description: We report a case with severe complication, without any previous report, a brain empyema after cerebrospinal fluid leak with good outcome afterword. A 45 years old man, returned six days after surgery, presenting cerebrospinal fluid leak, which after clinical and laboratory deterioration was reoperated. In the 14th postoperative facing worsening level of consciousness was diagnosed empyema in cerebellopontine angle and hydrocephalus underwent emergency surgery. Evolved with hemiplegia in the first postoperative attributed to vasculitis, completely recovered after 5 days. Conclusions: Although infrequent, lumbar discectomy is subject to severe complications, which as the case presented, can be dramatic. In surgeries must be careful to avoid cerebrospinal fluid leak e infectious complications.

Keywords: Herniated disc, postoperative complications, cerebrospinal fluid leak, brain empyema

Introduction

Lumbar discectomy is still the most frequent spine surgery performed nowadays for patients having back and leg symptoms. However, there are limited studies about their severe complications [1, 10, 11]. The complications described are error level, incidental durotomies, superficial or deep infection, such as discitis, and even severe complications like great vessels injuries and epidural hematomas causing symptomatic neurologic compression or cauda equina syndrome [2, 5]. However, there are no studies describing subdural empyema as postoperative complication of lumbar disc herniation. This report describes a case with dramatic deterioration, presenting a cerebellopontine angle empyema secondary to cerebrospinal fluid (CSF) leak after discectomy without being intraoperative identified a durotomy.

Case report

A 45 years old male patient underwent to a discectomy L3-L4 presenting L4 radiculopathy, with good recovery, discharged on the next day. After 6 days arrived on the emergency department, diagnosed with CSF leak. As the patient showed no improvement after 8 days of conservative treatment, it was chosen the surgical treatment.

Was observed during surgery wound infection, being introduced antibiotic and maintained an external lumbar shunt. Two days after surgery the patient developed agitation, numbness, investigated with brain tomography. This exam revealed a right cerebellopontine angle collection and hydrocephalus, submitted to an emergency craniotomy, presenting at the time of surgery as Glasgow Coma Scale score 10 (**Figure 1**).

It was confirmed by surgery a cerebellopontine angle empyema, remaining in intensive care unit with external ventricular drainage for 5 days. The neurological deficits worsened dramatically the next day, hemiplegic on the left, but preserved consciousness level. The initial hypothesis was vasculitis and inflammatory process evolving the cerebral peduncle and opted for conservative management. After 4

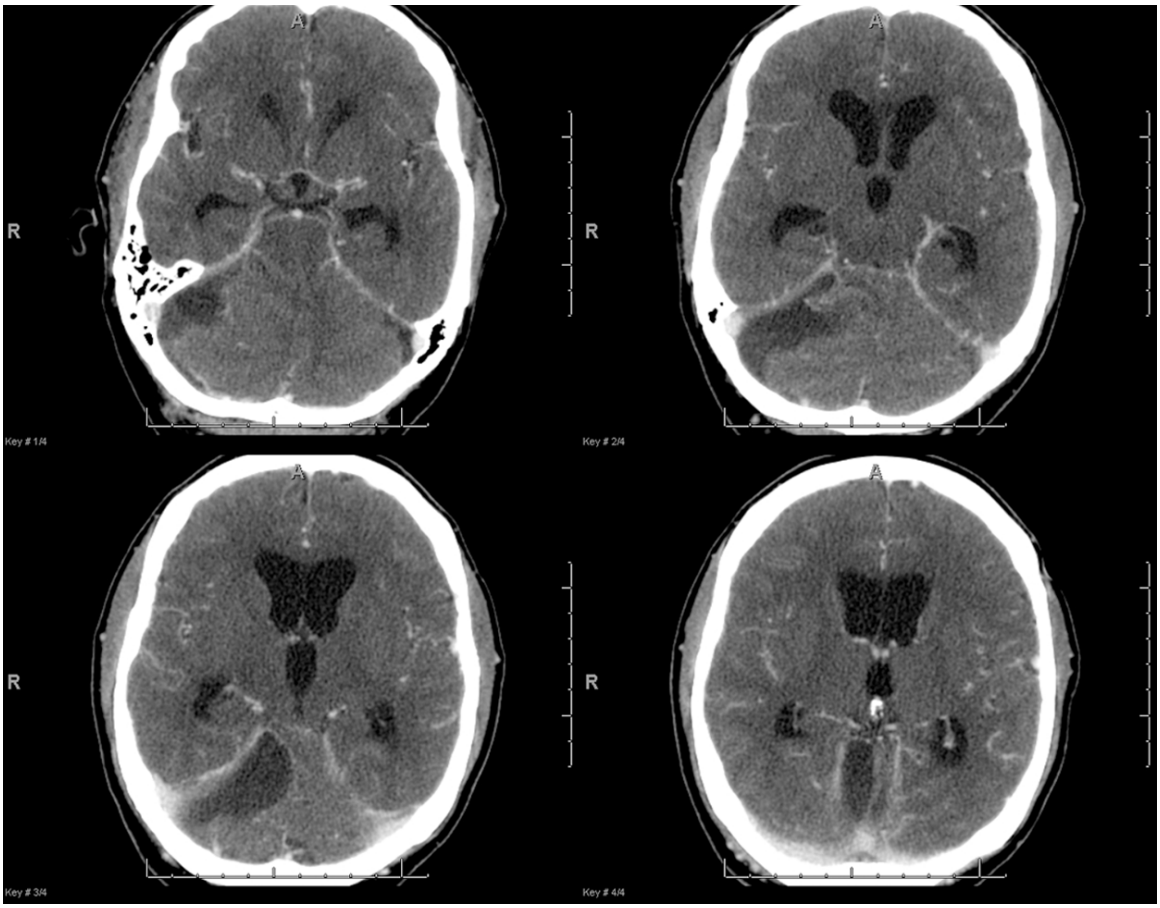

Figure 1. Skull computed tomography performed when the patient presented numbness, showing a lesion with contrast enhancement in the right cerebellopontine angle.

days had a great neurological improvement, presenting left hemiparesis with motor strength grade IV (**Figure 2**).

Was treated for 6 weeks with meropenem (6 mg/day) and the etiologic agent was isolated on the hemoculture, liquor, empyema fluid and bone- *Serratia marcescens*.

During follow-up after 2 months showed complete neurological recovery and a new skull computed tomography showed a normal aspect without empyema (**Figure 3**).

Discussion

The lumbar discectomy is the most common surgical procedure performed in spine centers. However, as disc herniation is usually found on images studies even on asymptomatic patients, the indication of surgical treatment must be precise [11].

Kraemer et al. suggested a classification considering the moment when the infection was apparent by dividing it into intraoperative complications, postoperative immediate postoperative later [3].

Among the most serious intraoperative complications is rupture of large abdominal vessels, which fortunately is very rare, 0.045%. The mortality rate reaches 50%. Another serious complication, also infrequent is the nerve root injury, with an incidence of 0.2% [8].

Incidental dural opening is the most frequent intraoperative complications; the prevalence reported is from 1-7%. The incidence demonstrated on the SPORT study described before was 4% [11].

In 2010 was published a prospective study of 4173 patients undergoing lumbar discectomy, open surgery with a microscope, to analyze the

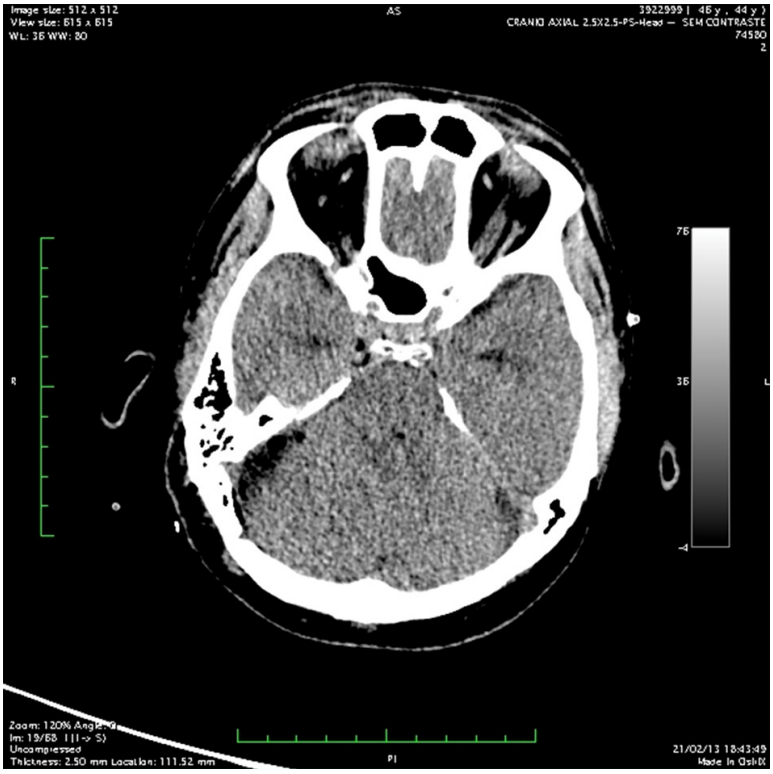

Figure 2. Skull computed tomography performed after empyema drainage and treatment, showing hydrocephalus improvement.

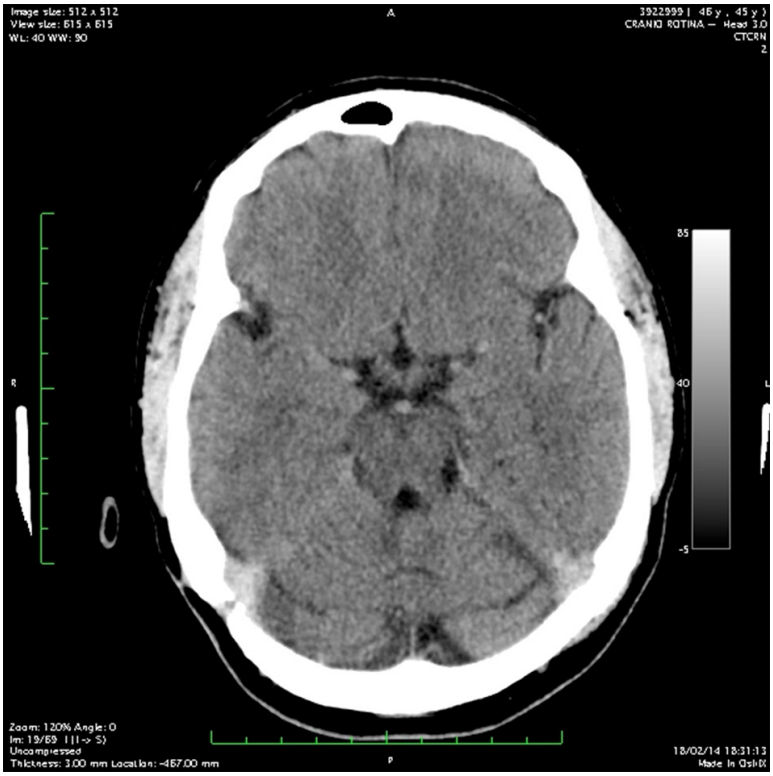

Figure 3. Skull computed tomography performed 2 months after empyema drainage, showing a normal brain aspect without empyema.

incidence of cerebrospinal fluid leak and its risk factors. 112 fistulas occurred in this series, the incidence of 2.7%. In patients with prior surgery the incidence was 5%. At 1 year follow up there was a small difference in patient satisfaction, however can be attributed to the fact that many patients with fistula were already underwent reoperations [8].

In 2005 Saxler et al. published a case control study comparing 41 cases of incidental durotomies with a control group matched for age, sex, spinal level, duration and follow-up, pulled from a total of 1280 patients. Reoperation cases were excluded. The incidence of dural tears reported on this study was of 3,2%. They showed an inferior improvement of symptoms at the group evaluated [6].

The persistent dural tear, if unidentified intraoperative, may lead to pseudomeningocele, with possible compression of nerve root, intracranial hypotension manifested by headache that modifies with postural aspects (worse symptoms at vertical position) or dural cutaneous fistula, leading to meningitis or intracranial hematomas [2, 4, 5, 7, 9].

It was reported in 2009 by Beier et al, a case of chronic subdural hematoma after CSF leak from intracranial hypotension condition. The patient one week after the surgery started presenting atypical headache for CSF leak, which did not improve by lawing down. Was initially treated as migraine, however worsened significantly after 4 weeks. At that time the wound had a

bulging without signs of infection. On the brain MRI was diagnosed with chronic subdural hematoma, with an 8 mm midline shift and the lumbar MRI showed signs of pseudomeningocele. Two other cases of CSDH post microdiscectomy had been reported, both with no signs of CSF leak [1].

However, until now, has not been reported such severe and rapid deterioration as described in this article after dural cutaneous fistula post lumbar discectomy. The possibility of severe neurological sequelae in a patient who had previously only radicular pain would be a dramatic outcome. The rapid intervention after diagnosis fortunately lead to as fast neurological improvement, and after two months was almost asymptomatic.

Conclusion

This case report demonstrates that a lumbar discectomy is a surgical procedure is considered simple, but still risky. Fortunately severe complications are infrequent, nevertheless they have been reported, as great vessels injuries, chronic subdural hematoma, nerve root injuries, and as reported in this article, brain empyema. As disk herniation is a prevalent pathology with expressive response to clinical treatment, the surgical treatment must be taken on consideration carefully.

Disclosure of conflict of interest

None.

Address correspondence to: Dr. Barbara Albuquerque Morais, Division of Neurosurgery at University of Sao Paulo School of Medicine, Rua Eneas Aguiar, 255. Office 4080, Sao Paulo 05403-010, SP, Brazil. Tel: +55 11 25486900; Fax: + 55 11 25486906; E-mail: babyamorais@gmail.com

References

[1] Beier AD, Soo TM, Claybrooks R. Subdural hematoma after microdiscectomy: a case report and review of the literature. Spine J 2009; 9: e9-12.

[2] Cammisa FP Jr, Girardi FP, Sangani PK, Parvataneni HK, Cadag S, Sandhu HS. Incidental durotomy in spine surgery. Spine 2000; 25: 2663-7.

[3] Kraemer R, Wild A, Haak H, Herdmann J, Krauspe R, Kraemer J. Classification and management of early complications in open lumbar microdiscectomy. Eur Spine J 2003; 12: 239-46.

[4] Kuhn J, Hofmann B, Knitelius HO, Coenen HH, Bewermeyer H. Bilateral subdural haematoma and lumbar pseudomeningocele due to a chronic leakage of liquor cerebrospinalis after a lumbar discectomy with the application of ADCON-L gel. J Neurol Neurosurg Psychiatry 2005; 76: 1031-3.

[5] Lu CH, Ho ST, Kong SS, Cherng CH, Wong CS. Intracranial subdural hematoma after unintended durotomy during spine surgery. Can J Anaesth 2002; 49: 100-2.

[6] Saxler G, Krämer J, Barden B, Kurt A, Pförtner J, Bernsmann K. The long-term clinical sequelae of incidental durotomy in lumbar disc surgery. Spine 2005; 30: 2298-302.

[7] Sciubba DM, Kretzer RM, Wang PP. Acute intracranial subdural hematoma following a lumbar CSF leak caused by spine surgery. Spine 2005; 30: e730-2.

[8] Strömqvist F, Jönsson B, Strömqvist B. Swedish Society of Spinal Surgeons. Dural lesions in lumbar disc herniation surgery: incidence, risk factors, and outcome. Eur Spine J 2010; 19: 439-42.

[9] Subach BR, Copay AG, Martin MM, Schuler TC, DeWolfe DS. Epidural abscess and cauda equina syndrome after percutaneous intradiscal therapy in degenerative lumbar disc disease. Spine J 2012; 12: e1-4.

[10] Teixeira MJ, Yeng LT, Garcia OG, Fonoff ET, Paiva WS, Araujo JO. Failed back surgery pain syndrome: therapeutic approach descriptive study in 56 patients. Rev Assoc Med Bras 2011; 57: 282-7.

[11] Weinstein JN, Lurie JD, Tosteson TD, Skinner JS, Hanscom B, Tosteson AN, Herkowitz H, Fischgrund J, Cammisa FP, Albert T, Deyo RA. Surgical vs nonoperative treatment for lumbar disk herniation: the Spine Patient Outcomes Research Trial (SPORT): a randomized trial. JAMA 2006; 296: 2441-50.