

Article

# Acute subdural hematoma as a complication of diagnostic lumbar puncture: case report

Luis Rafael Moscote-Salazar<sup>1</sup>, Andres M. Rubiano<sup>1</sup>, Hernando Raphael Alvis-Miranda<sup>1</sup>, Nasly Zabaleta-Churio<sup>1</sup>, Willem Guillermo Calderón-Miranda<sup>2</sup>, Gabriel Alcalá-Cerra<sup>1</sup>, Jorge Aquino-Matus<sup>2</sup>

<sup>1</sup>COLOMBIA, <sup>2</sup>MEXICO



## Acute subdural hematoma as a complication of diagnostic lumbar puncture: case report

Luis Rafael Moscote-Salazar<sup>1</sup>, Andres M. Rubiano<sup>2</sup>,  
Hernando Raphael Alvis-Miranda<sup>3</sup>, Nasly Zabaleta-Churio<sup>4</sup>,  
Willem Guillermo Calderón-Miranda<sup>5</sup>, Gabriel Alcalá-Cerra<sup>6</sup>,  
Jorge Aquino-Matus<sup>7</sup>

<sup>1</sup>Neurosurgeon, RED LATINO, Latin American Trauma & Intensive Neuro-Care Organization Bogota, COLOMBIA

<sup>2</sup>Universidad El Bosque, MEDITECH Foundation, Neurosurgeon, RED LATINO, Latin American Trauma & Intensive Neuro-Care Organization, Bogota, COLOMBIA

<sup>3</sup>Resident of Neurosurgery, Universidad de Cartagena, Cartagena de Indias, COLOMBIA

<sup>4</sup>Nurse, RED LATINO, Latin American Trauma & Intensive Neuro-Care Organization, COLOMBIA

<sup>5</sup>Resident of Radiology, National Autonomous University of Mexico, Mexico D.F, MEXICO

<sup>6</sup>Neurosurgeon, Universidad de Cartagena, COLOMBIA

<sup>7</sup>Physician, Universidad de San Carlos de Guatemala, National Autonomous University of Mexico, Mexico D.F, MEXICO

**Abstract:** *Background:* Intracranial hemorrhagic complications are unusual after diagnostic lumbar puncture. *Case report:* A diagnostic lumbar puncture was performed in a 55 year-old male for acute bacterial meningitis workup. Immediately after the procedure he developed intense headache and a head Computed Tomography (CT) was done which identified an acute subdural fluid collection. No surgical management was offered and conservative medical follow-up was indicated. *Conclusion:* The occurrence of a headache with red flags after a lumbar puncture may suggest the possibility of an acute subdural hematoma.

**Key words:** complications, subdural hemorrhage, intracranial hematoma, lumbar puncture

### Introduction

Lumbar puncture is a diagnostic and therapeutic procedure in patients with a focal

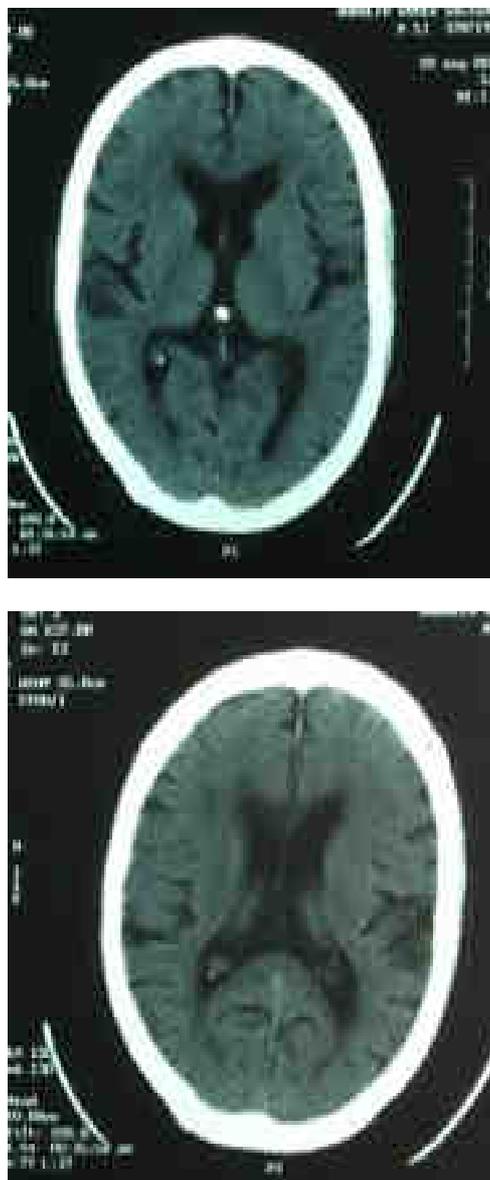
neurologic clinical picture in whom infections or cerebral aneurism rupture is suspected. Nonetheless, even performed under expert hands, it is not extent of complications such as

spinal or intracranial hemorrhages. Acute subdural hematoma complicating a lumbar puncture is rare. Few reports have been published about rare complications, including spinal anesthesia among others. (1, 2, 3, 4).

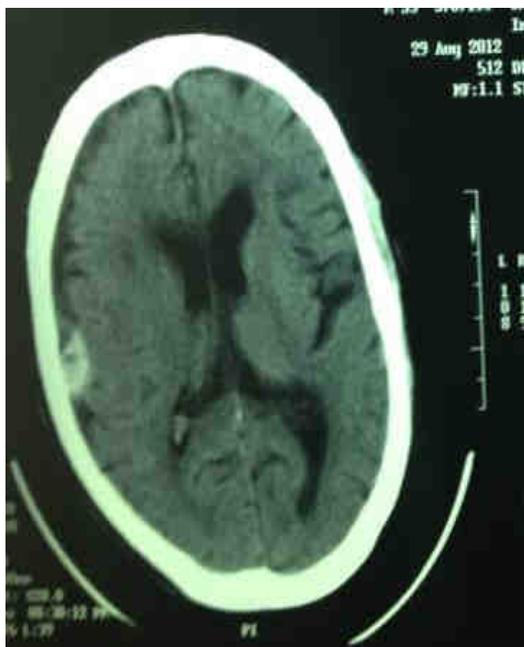
The clinical case and literature review of an acute subdural hematoma after lumbar puncture is reported. Physiopathological findings are discussed.

### Clinical Case

A 50 year-old male presented to our private clinic with a 4 hour history of dysarthria. Past medical history was relevant for hypertension. Upon admission he was alert and cooperative with slurred speech. On neurological examination, no alteration in cranial nerves was detected and no other neurological deficit was documented. A brain CT scan (Figure 1a and b) was negative. Over the next 24 hours he developed headache, fever and nuchal rigidity, and a diagnostic lumbar puncture was done reporting normal laboratory test results (not shown). Twelve hours after the procedure he developed intense headache refractory to analgesics and a brain CT scan revealed a right parietal hyperdense lesion compatible with an acute subdural hematoma with little mass effect. No surgical management was offered and underwent medical treatment and observation. Clinical course was eventful and 8 days after the procedure he was discharged home with no neurological deficit.



**Figure 1 (a, b)** - Non-contrast brain CT scan on admission with no relevant findings



**Figure 2 (a, b)** - Non-contrast brain CT scan showing a right subdural parietal hematoma after lumbar puncture

## Discussion

Subdural hematoma is a rare complication after lumbar puncture in medical literature. (5, 6, 7). A proposed mechanism relates to traction and tear of the intracranial subdural veins under a low pressure gradient secondary to the extraction of cerebrospinal fluid (CSF). An excessive loss of CSP of about 250 cc may cause displacement of the intracranial structures. (8, 9, 10) Risk factors for the formation of subdural collections are: cerebral atrophy, cerebral aneurisms, and blood dyscrasias including platelet anti-aggregation drugs, arteriovenous malformations, pregnancy, dehydration and fenestrations from previous punctures. Also, technical difficulties have been associated with neuroaxial hematomas. This risk may be reduced performing an atraumatic lumbar puncture technique with fine needles (11, 12). Intraparenchymal hemorrhage has been described in less frequency and usually associated with rapid onset or transitory high blood pressure. (13)

## Conclusion

The true incidence of subdural hematoma secondary to a lumbar puncture is unknown and it is possible that many patients are treated without any imaging studies. Treatment of this type of complications may be surgical or conservative as in the case presented. Complementary imaging studies are recommended for patients with new onset of mild symptoms after a lumbar puncture.

### Correspondence

Dr. Luis Rafael Moscote-Salazar

RED LATINO, Latin American Trauma &  
Intensive Neuro-Care Organization, Bogota,  
Colombia

E-mail: mineurocirujano@aol.com

### References

1. Bjarnhall M, Ekseth K, Bostrom S, Vegfors M. Intracranial subdural haematoma: a rare complication following spinal anaesthesia. *Acta Anaesthesiol Scand* 1996; 40:1249-1251.
2. Acharya, R., Chabra, S.S., Ratra, M., Sehgal, A.D.: Cranial subdural haematoma after spinal anaesthesia. *Br J Anaesthesia* 2001; 86: 893-895.
3. Loo CC, Dahlgren G, Irestedt L. Neurological complications in obstetric regional anaesthesia. *Int J Obstet Anesth* 2000; 9:99-124.
4. Alemohammad S, Bouzarth WF. Intracranial subdural hematoma following lumbar myelography. *J Neurosurg* 1980;52:256-258
5. Lavie F1, Hervé D, Le Ber I, Brault JL, Sangla S, de Broucker T. Bilateral intracranial subdural hematoma following lumbar puncture: report of a case. *Rev Neurol (Paris)*. 1998 Oct;154(10):703-6. Vos PE1, de Boer WA, Wurzer JA, van Gijn J. Subdural hematoma after lumbar puncture: two case reports and review of the literature. *Clin Neurol Neurosurg*. 1991;93(2):127-32.
6. Gaucher DJ Jr1, Perez JA Jr. Subdural hematoma following lumbar puncture. *Arch Intern Med*. 2002 Sep 9;162(16):1904-5.
7. Reynolds F. Dural puncture and headache. Avoid the first but treat the second. *Br Med J* 1993; 306: 874-876
8. Acharya R, Chhabra SS, Ratra M, Sehgal AD. Cranial subdural haematoma after spinal anaesthesia. *Br J Anaesth* 2001; 86: 893-895.
9. van de Kelft E, Bosmans J, Parizel PM, van Vyve M, Selosse P. Intracerebral hemorrhage after lumbar myelography with iohexol: report of a case and review of the literature. *Neurosurgery*. 1991;28(4):570-574.
10. De la Linde C. Complicaciones de la anestesia espinal. *Act Anest Reanim (Madrid)* 1997; 7: 15-26.
11. Pryle BJ, Carter JA, Cadoux-Hudson T. Delayed paraplegia following spinal anaesthesia. *Anaesthesia* 1996; 51: 263-267.
12. Peiró CM, Caballer N, Errando CL, Moliner S. Spinal and cerebral hematoma following diagnostic lumbar puncture with fatal course. *Rev Esp Anestesiol Reanim*. 2003 Nov;50(9):481-5. Spanish