

Paravertebral infection after acupuncture: case report and literature review

Micaela Besse, Aníbal Sarotto, José A. Rosado Pardo, Adriana E. Cubecino

Orthopedics and Traumatology Department, Spine Unit, Hospital "Carlos G. Durand" (Buenos Aires, Argentina)

ABSTRACT

Acupuncture originated in China approximately 2,000 years ago and is a growing treatment modality worldwide. Patients resort to acupuncture for a variety of conditions, including low back pain. We discuss the case of a 74-year-old man who resorted to acupuncture to treat his low back pain, after which the pain increased. An infection was detected and treated. Despite the fact that acupuncture can be considered generally safe if performed by well-trained professionals, literature from around the world reports all kinds of complications, most of which are minor and usually a result of an inappropriate technique. The popularity of this alternative treatment has driven some organizations, such as the World Health Organization (WHO), to draft guidelines about its safety. Being aware of possible complications allows for an early diagnosis and treatment. On this paper, we discuss the aforementioned case and include a review of the related literature.

Keywords: Acupuncture complications; skeletal-muscle complications; alternative medicine.

Level of Evidence: IV

Infección paravertebral posacupuntura: reporte de un caso y revisión bibliográfica

RESUMEN

La acupuntura es una técnica de origen chino que surge hace aproximadamente 2000 años. Es una modalidad terapéutica que ha cobrado gran importancia en el mundo occidental para el tratamiento de diversos cuadros, incluida la lumbalgia.

Comunicamos el caso de un hombre de 74 años de edad, que consulta por reagudización de la lumbalgia crónica, luego de un tratamiento alternativo, a quien se le diagnostica una complicación infecciosa. Si bien, en manos experimentadas e instruidas, es una técnica con relativamente escasas complicaciones, se han publicado diversos reportes que describen complicaciones, en su mayoría, menores y asociadas a una técnica estéril insuficiente o a falta de conocimiento por parte del acupunturista. El auge de estas técnicas alternativas puso el foco en las medidas de seguridad, por lo cual entes, como la Organización Mundial de la Salud han creado guías para su correcto uso. Conocer las posibles complicaciones facilita el diagnóstico temprano y el tratamiento. Se analiza la presentación clínica y se realiza una revisión bibliográfica del cuadro.

Palabras clave: Acupuntura; complicaciones; medicina alternativa; complicaciones musculoesqueléticas.

Nivel de Evidencia: IV

INTRODUCTION

"Acupuncture" derives from the Latin words *acus* (needle) and *punctura* (penetrate), since it involves the manual insertion of thin metallic needles into the skin to stimulate strategic points and re-balance the flow of energy—known as "chi" in Chinese medicine. This technique emerged approximately 2,000 years ago and has become quite popular in the Western World for the treatment of various conditions, including low back pain.^{1,2}

Received on May 16th, 2019. Accepted after evaluation on June 17th, 2019 • MICAELA BESSE, MD • m.besse@hotmail.com.ar 

How to cite this paper: Besse M, Sarotto A, Rosado Pardo JA, Cubecino AE. Paravertebral infection after acupuncture: case report and literature review. *Rev Asoc Argent Ortop Traumatol* 2019;84(4):420-426. 10.15417/issn.1852-7434.2019.84.4.990

Since the needles penetrate several centimeters into the skin, one of the most important complications is the transmission of pathogens from the environment to the patient or between patients. In most of the reported cases, bacteria were inoculated from the flora of the skin or from the environment due to an inadequate disinfection of the region where the needle was inserted. Seventy percent of the adverse effects reported following this technique were skeletal-muscle or skin infections, while a few of them were major complications, such as endocarditis, retroperitoneal abscesses, pneumothorax or meningitis.³

Low back pain has a high prevalence, and, despite the different treatment modalities offered by traditional medicine, some patients look for other options. Acupuncture and other alternative therapies are booming, and although they are widespread in society, the potential complications, including death, are little known. The objective of our study is to report a case and conduct a literature review on the complications of this therapy, since, while they are often overlooked by traditional doctors, can help us educate our patients.

CASE REPORT

In July 2018, a 74-year-old Argentinean physician visits the Emergency Room of a private hospital due to exacerbation of his chronic low back pain. Medical history: social drinker, former smoker, ischemic heart disease in 2013, drug-induced hepatitis, constrictive pericarditis (2014) and presence of discopathies on previous MRIs (2015: degenerative disc disease, mainly between L4-L5 and L5-S1 of the posteromedial and posterolateral spine).

He reports having tried acupuncture (July 12th, 2018) as an alternative therapy and that his low back pain increased after that. The patient has paravertebral tenderness at the thoracolumbar level, but no fever or signs of radiculopathy. A week later, he visits another hospital, where an intramuscular controlled-release steroid, tramadol and pregabalin were administered.

When visiting our hospital, the patient reports progressive exacerbation of his symptoms, with a 9/10 pain intensity on the visual analog scale. His general condition is good, he has no fever and no signs of radiculopathy or mobility deficit. An MRI shows a paravertebral fluid collection.

The patient is referred to a tertiary care center, where new exams are performed. The lab report is as follows: WBC 17,000; quantitative C-reactive protein 2.2 (reference value: 0.5 mL/L), and ESR 6 mm/h. Blood cultures are negative. The MRI shows a right paravertebral fluid collection (Figures 1-4).

Two percutaneous drainages are performed (July 31st, 2018), collecting 20 mL and 50 mL of liquid, respectively, together with cultures for methicillin-resistant *S. aureus* (MRSA) susceptible to gentamicin. Specific antibiotic therapy is started. Given the rapid progress, the persistence of the pain, the episodes of fever and the increase in lab values (ESR 30 and ultrasensitive C-reactive protein 2.77 mg/L), it was decided to perform a surgical drainage, collecting 150 mL of fluid. Cultures show the same bacteria, so a specific antibiotic therapy is administered intravenously for four weeks. Oral agents are prescribed for outpatient use and the patient is instructed to follow up with the Infectious Diseases Department. Progress is favorable.

DISCUSSION

Acupuncture is an alternative medicine method that has become quite popular in the Western World, putting its safety and therapeutic effectiveness in the spotlight. In the United States alone, the National Institutes of Health reported that more than 3.1 million adults and about 150,000 children resorted to acupuncture in 2008. This therapy was accepted and recognized by the World Health Organization, and there are multiple guidelines that provide evidence for its use in different conditions in the safest way possible.^{2,4,5}

Some of the most common complications before the 1990s were infections, and one of the most serious ones was the transmission of viral hepatitis. Other reported complications include pneumothorax, cardiac tamponade and spinal injuries. Following the guidelines and using disposable needles helped reduce infections. In a prospective study of 34,000 acupuncture sessions, MacPherson *et al.*⁶ reported only 43 minor complications, with an incidence of 1.3 per 1,000 sessions. Melchart's group reported an incidence of 7.1% of minor complications and only 5 cases among almost 98,000 sessions performed. Both concluded that it is a safe method with a very low rate of complications.^{4,6,7}

It is worth noting that, despite the wide acceptance of this alternative medicine method in the Western World (mainly in Europe and the United States), it is more popular in China, thus Chinese literature was reviewed to

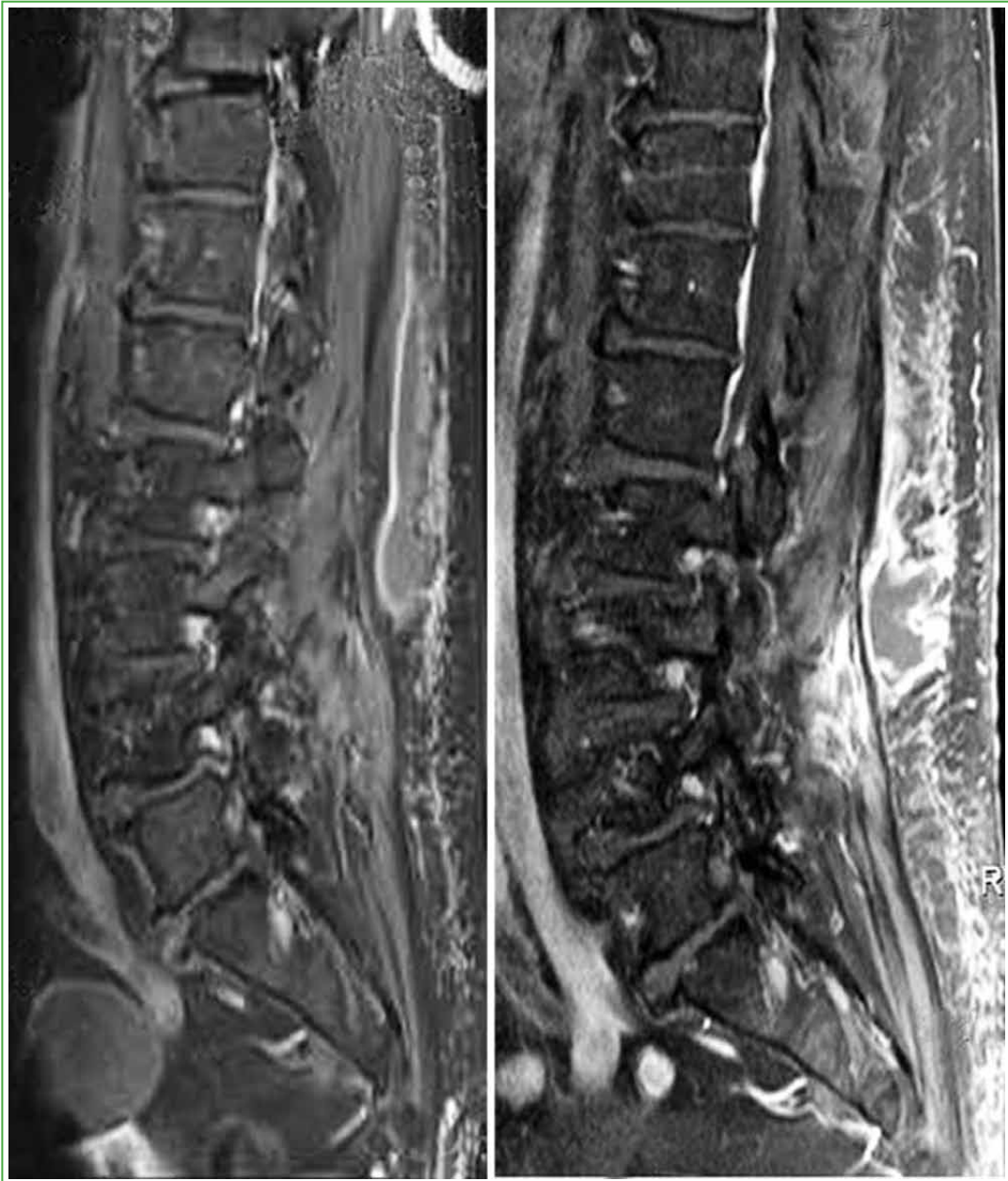


Figure 1. Sagittal view of a lumbar spine MRI showing a fluid collection at the level of the right paraspinal muscles, extending from T12 to L4.

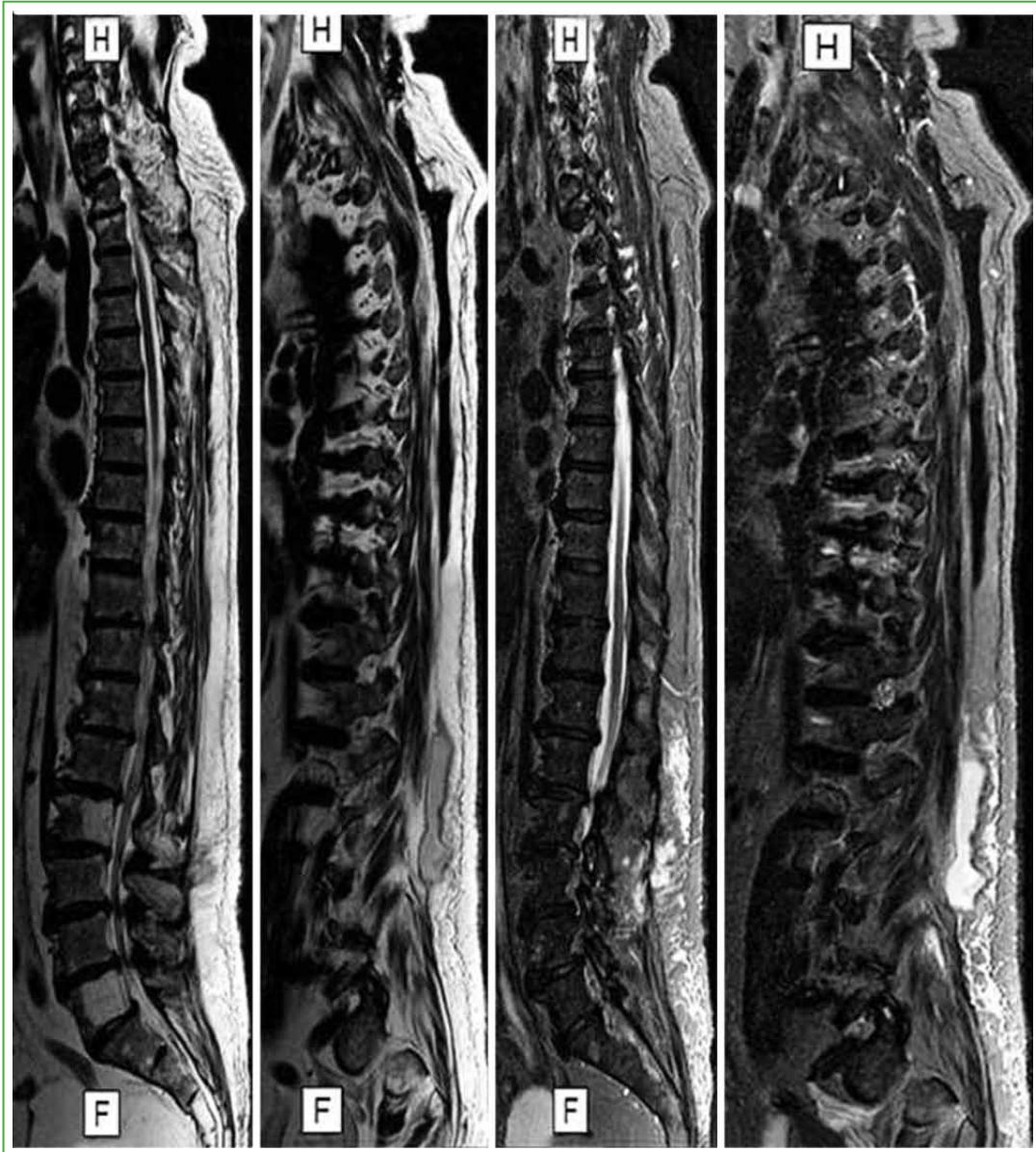


Figure 2. Sagittal view of T1-weighted, T2-weighted and STIR MRI scans of the entire spine showing a hyperintense fluid collection at the level of the right paraspinal muscles.
Finding: hyperintensity of L5 and L2 vertebral bodies.

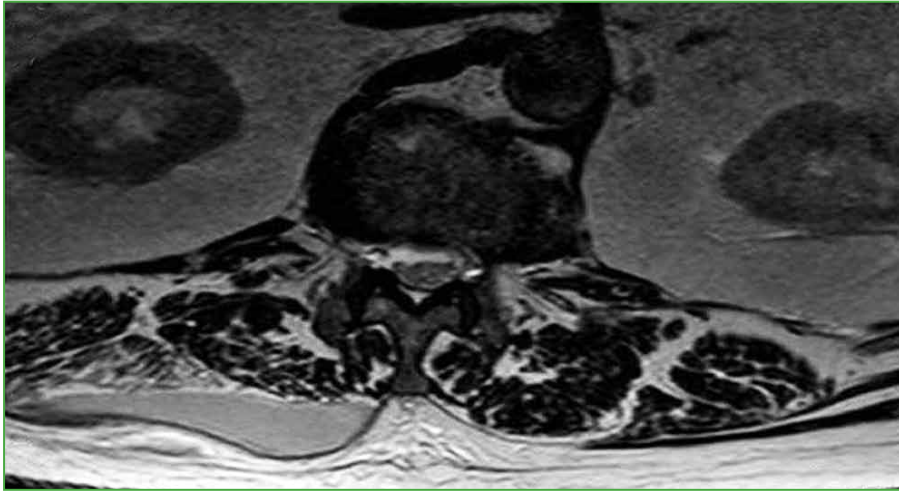


Figure 3. Axial view of an MRI of L1 showing a subaponeurotic fluid collection at the level of the right paraspinal muscles.

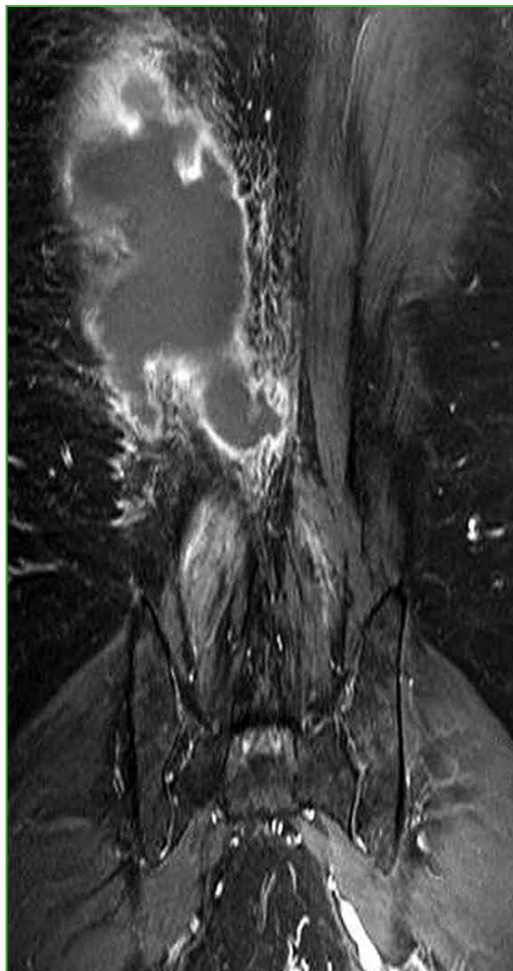


Figure 4. Coronal view of an MRI of the paraspinal muscles showing a fluid collection at the level of the right paraspinal muscles with a diameter of 79 mm (cephalocaudal) x 11 mm (lateral).

assess complication reports. Infections seemed to be related to an inappropriate aseptic technique and a poor knowledge of the acupuncturist regarding the use of reusable needles and alcohol disinfection. As for traumatic complications, the most common one was pneumothorax, mostly associated with a poor application technique (excessively deep needle insertion). For this reason, the Liao group emphasizes the importance of acupuncturist training and hygiene techniques.⁷

With the emergence of disposable needles, reports of cases of viral infections, such as hepatitis, are very rare. However, in recent years, bacterial infections, including those caused by MRSA, have become more common. Some of the most commonly reported germs are *S. aureus*, group B streptococci, *E. coli* and, less commonly, *M. tuberculosis*. As for traumatic complications, pneumothorax remains the most common organ lesion.^{1,4}

In the international literature, there is general emphasis on the importance of training on anatomy notions and hygiene measures, as well as on the different techniques applied, and compliance with safety guidelines, since these are key to reduce avoidable complications. In contrast, it is also agreed that the incidence is low, so acupuncture is considered a safe therapy.⁸

In our country, the Argentine Society of Acupuncture offers professional training on this method. Currently, there are Pain Management and Palliative Care Departments, in public and private centers, where acupuncture is performed, both in Buenos Aires and in other provinces of the country. The Ministry of Health, through its Resolution No. 859 of 2008, recognizes acupuncture as a practice or procedure that can be performed by a healthcare professional with a university degree, who is duly trained and included in two Acts (Acts No. 17,132 and 24,317), i.e. physicians and physician extenders, such as kinesiologists and physical therapists. Despite this regulation, it is widely known that there are those who practice acupuncture without being duly authorized, resulting in potential complications.⁹⁻¹¹

CONCLUSIONS

We all know that any medical procedure can be potentially harmful, especially when performed by poorly trained and unskilled professionals, or in an unregulated environment. While we have not found indexed publications on this subject in our country, we do consider that reporting possible complications of acupuncture is very important. Therefore, although complication rates are very low, we chose to report this particular case to increase awareness and allow for an early diagnosis and a better management.

Conflict of interest: Authors claim they do not have any conflict of interest.

A. Sarotto ORCID ID: <https://orcid.org/0000-0002-2199-5524>

J. A. Rosado Pardo ORCID ID: <https://orcid.org/0000-0001-8467-3453>

A. E. Cubecino ORCID ID: <https://orcid.org/0000-0002-8955-6595>

REFERENCES

1. Salaheldin AY Abusin. Multi-regional abscesses caused by streptococcus milleri following acupuncture. *Sudan Med J* 2010;46(2):91-94. <http://www.smj.eg.net/inner/jarticle.aspx?aid=132>
2. Guo Y, Zhao H, Wang F, Li SN, Sun YX, Han MJ, et al. Recommendations for acupuncture in clinical practice guidelines of the national guideline clearinghouse. *Chin J Integr Med* 2017;23(11):864-70. <https://doi.org/10.1007/s11655-016-2750-4>

3. Woo PCY, Lin AWC, Lau SKP. Acupuncture transmitted infections Are underdiagnosed, so clinicians should have a high index of suspicion. *BMJ* 2010;340:c1268. <https://doi.org/10.1136/bmj.c1268>
4. Shifen Xu, Lizhen Wang, Emily Cooper, Ming Zhang, Eric Manheimer, Brian Berman, et al. Adverse events of acupuncture: a systematic review of case reports. *Evid Based Complement Alternat Med* 2013;2013:581203. <https://doi.org/10.1155/2013/581203>
5. World Health Organization. *WHO traditional medicine strategy: 2014-2023*. Geneva: World Health Organization; 2013:1-78.
6. MacPherson H, Thomas K, Walters S, Fitter M. The York acupuncture safety study: prospective survey of 34 000 treatments by traditional acupuncturists. *BMJ* 2001;323(7311):486-7. <https://doi.org/10.1136/bmj.323.7311.486>
7. Lao L, Hamilton GR, Fu J, Berman BM. Is acupuncture safe? A systematic review of case reports. *Altern Ther Health Med* 2003;9(1):72-83. PMID:12564354
8. Zhang J, Shang H, Gao X, Ernst E. Acupuncture-related adverse events: a systematic review of the Chinese literature. *Bull World Health Organ* 2010;88:915-21C. <https://doi.org/10.2471/BLT.10.076737>
9. Salud Pública. Boletín Oficial N° 29.733. Ministerio de Salud. Septiembre de 2001.
10. Salud Pública. Resolución 859. Ministerio de Salud, Agosto 2008. <http://servicios.infoleg.gob.ar/infolegInternet/anexos/140000-144999/144053/norma.htm>
11. Sociedad Argentina de Acupuntura. <http://saacupuntura.com.ar/>.