

## Cervico-Thoracic Epidural Abscesses Following Acupuncture Therapy - An Uncommon but Potentially Devastating Complication

Jeremy Keng Meng Goh\*, Nicholas Eng Meng Yeo, Poh Ling Fong, Wai Mun Yue, Seang Beng Tan and Mashfiqul Arafin Siddiqui Mohammad

Department of Orthopaedic Surgery, Singapore General Hospital, Singapore

\*Corresponding author: Jeremy Keng Meng Goh, Singapore General Hospital, Singapore, Tel: +65 93259537; E-mail: germgoh@hotmail.com

Rec date: March 22, 2016; Acc date: May 09, 2016; Pub date: May 14, 2016

Copyright: © 2016 Meng Goh KM, et al. This is an open-access article distributed under the terms of the Creative Commons Attribution License, which permits unrestricted use, distribution, and reproduction in any medium, provided the original author and source are credited.

### Abstract

We present a case report of a 56-year-old woman with cervical and thoracic epidural abscesses shortly after having received acupuncture treatment. The aim of this case report is to highlight a case of epidural abscesses following acupuncture. Epidural abscesses are rare complications of acupuncture treatment, which can potentially have significant neurological and functional consequences. Prompt detection and management of the condition can prevent or reduce permanent disabilities. Individuals who undergo regular acupuncture therapy should be made aware of this possible complication.

**Keywords:** Cervical; Cervical spine; Epidural abscess; Acupuncture; Spinal epidural abscess; Acupuncture abscess; Abscess

### Introduction

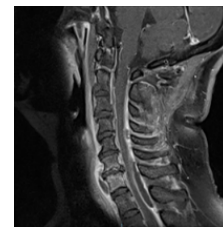
Acupuncture is a widely practiced modality of pain management especially in Asian countries where it is easily accessible. In particular it has been increasingly used for the treatment of back pain with some degree of effectiveness [1,2]. In Singapore, it is especially prevalent given the large ethnic Chinese population. A study by Phoon et al. on healthy blood donors, found that of 6,271 adult men, 1,081 of them had previously undergone acupuncture (17%) [3]. Albeit a generally safe procedure in professionally trained hands, it is still associated with local complications at the region where needles are inserted [4]. Rare complications include spinal epidural abscesses, of which only a few cases have been reported [5-9].

### Case Report

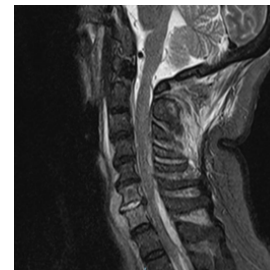
A 56-year-old Chinese lady presented to the accident and emergency department with a history localized neck pain that had been present for 2 weeks. The pain was constant and not related to movement and she did not have any fever. Her past medical history included hypertension and dyslipidaemia. Her body mass index was 22.1 kg/m<sup>2</sup>. The neck pain was of sudden onset one day whilst she was in her office, and she described her neck as feeling "tight" and being unable to turn it. She denied any history of trauma and initially consulted a chiropractor for treatment as it felt muscular in nature and was worse with movement. She underwent manipulation and acupuncture treatment to the posterior neck region which partially relieved her symptoms. 12 days later, she presented to the Accident and Emergency department with a 1-day history of sudden left arm numbness and weakness. This was also associated with back pain and bilateral lower limb weakness and numbness. In addition, she was unable to micturate that day.

On physical examination, she was noted to have varying grades of weakness in all 4 limbs. She was afebrile and haemodynamically stable. Laboratory tests were suggestive of an infection with the total white blood cell count of 30.1 x 10<sup>9</sup>/L, Erythrocyte sedimentary rate of 119

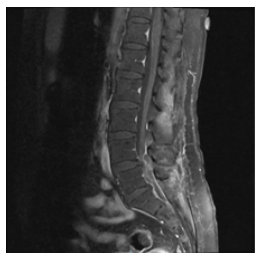
mm/hr, C Reactive Protein 391 mg/L, and a procalcitonin 2.4 ng/ml. Radiographs of the cervical, thoracic spine were unremarkable while lumbar spine showed grade 1 L4/5 degenerative spondylolisthesis. An MRI of the cervical, thoracic and lumbar spine revealed multiple rim enhancing abscesses in the posterior epidural space from the C6 to T2 (Figures 1 and 2).



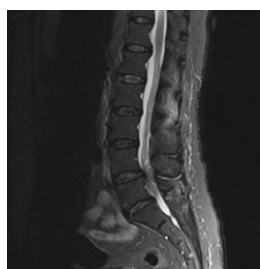
**Figure 1:** T1-Weighted sagittal magnetic resonance imaging fat saturation with contrast showing anterior epidural abscess C5 to C6 and posterior epidural abscesses C6 to T2.



**Figure 2:** T2-Weighted sagittal TIRM magnetic resonance imaging showing anterior epidural abscess C5 to C6 and posterior epidural abscesses C6 to T2 and L4-5 (Figures 3 and 4) vertebral levels, and an anterior epidural abscess C5 to C6.



**Figure 3:** T1-Weighted sagittal magnetic resonance imaging fat saturation with contrast showing L4-5 epidural abscess.



**Figure 4:** T2-Weighted sagittal TIRM magnetic resonance imaging showing L4-5 epidural abscess.

The patient underwent a left C6 laminotomy, bilateral C7 laminotomy, T1 laminectomy, T2 superior laminotomy and drainage of epidural abscess with decompression of the spinal cord. Intra-operatively, the epidural abscess was noted to extend from C6-T2, with

large amounts of pus and surrounding unhealthy tissue. The wound was closed over a drain. The patient was commenced on intravenous cefazolin and vancomycin. Post-operatively the patient was monitored in the surgical intensive care unit and subsequently sent to the general ward.

Blood and intra-operative tissue and fluid cultures grew methicillin sensitive *Staphylococcus aureus* (MSSA). Patient was treated with IV Benzylpenicillin after consultation with infectious disease physicians who were of the opinion that the pan-sensitive *S. aureus* was a skin commensal and was probably inoculated by the acupuncture needles. She remained stable post-operatively and was subsequently commenced on physiotherapy and rehabilitation. A 6 week course of IV benzylpenicillin was completed during her inpatient stay. At 6 weeks post-operatively, her muscle power in bilateral upper and lower limb muscle groups improved to MRC (medical research council) grade 4/5. She was fitted with an aspen collar post-operatively which was subsequently changed to a cervical-thoracic orthosis. Muscle power improved with continued rehabilitation to MRC grade 5/5 in almost all muscle groups at 16 months post-operatively. The patient was able to ambulate independently and her urinary catheter was removed prior to her discharge.

## Discussion

A high index of suspicion is required for prompt diagnosis and treatment of an epidural abscess following acupuncture treatment. For our patient, we obtained an MRI within 24 hours of admission and performed surgical decompression within 48 hours of admission. Surgical decompression is the choice of treatment for compressive epidural abscesses with neurologic compromise [10]. This is concordant with the majority of the case reports in which intravenous antibiotics were administered followed by surgery with improvements seen in these cases [5-9] (Table 1).

Year Published	Author	Age/Sex	Diagnosis	Spinal level	Clinical symptoms	Bacteriology	Treatment modality	Outcome
1998	Shogo Yazawa [5]	67 M	Cervical epidural abscess	C1-2	Fever, back and neck pain, quadraparesis, respiratory insufficiency	None isolated	Antibiotics	Recovery at 5 months
2001	Ishibe [10]	13 M	Lumbar facet joint septic arthritis associated with epidural abscess	L4-5	Fever, back pain	None isolated	Antibiotics	Recovery at 1 week
2002	Lee [11]	67 M	Cervical epidural abscess, osteomyelitis, endophthalmitis	C2-6	Fever, neck stiffness, loss of vision	Group B streptococcus/ blood cultures	Antibiotics and vitrectomy (for eye)	Recovery at 7 weeks
2006	Bang [4]	64 M	Lumbar epidural abscess, bilateral psoas abscesses	T11-L3	Back pain, subsequent paraplegia	E.coli/blood cultures	Antibiotics	Paraplegia at 3 months. No neurological recovery
2012	Lee [8]	47 F	Cervical epidural abscess	C1-3	Fever, neck and submandibular pain and swelling	None isolated	Antibiotics	Recovery at 1month

2013	Hyun Jeung Yu [7]	80 F	Multiple cervical and lumbar epidural abscesses	C3-7, L3-5, L5-S1	Fever, quadraparesis, difficulty voiding	<i>Staphylococcus aureus</i>	Surgical drainage and antibiotics	Information not available
2014	Chih Wei Yang [12]	47 M	Lumbar epidural abscess	L3-5	Fever, back pain, root signs	<i>Serratia marcescens</i> / Intra-operative specimen culture	Surgical drainage and antibiotics	Recovery at 3 months
2016	Yindan Yao [13]	54 M	Cervical and thoracic epidural abscess	C4-T2	Fever, neck pain	Information not available	Antibiotics	Partial recovery
Our case	-	56 F	Cervical and thoracic epidural abscess	C5-6, C6-T12	Neck pain, quadraparesis, difficulty voiding	MSSA/Intra-operative specimen cultures	Surgical drainage and antibiotics	Near full recovery at 16 weeks

**Table 1:** Previously reported cases (table adapted from Yang C.W et al. case report, modified and additional cases added).

Antibiotics should be tailored from a broad spectrum to a targeted regime after the cultures are available. Fortunately for the patient, a rapid diagnosis was made and she was able to achieve good functional recovery post-surgery and no paraplegia/paralysis was permanent.

*Staphylococcus aureus* is the most common organism detected in spinal epidural abscesses, as was the case for our patient. Our patient grew MSSA from the abscess, blood and urine cultures. We believe our patient's infection came about through a direct inoculation from the acupuncture needle spreading a skin commensal into the deeper tissues. In cases where patients are colonized by more resistant organisms like MRSA, treatment may require a course of vancomycin which would be more costly and difficult.

In this case, we suspect the acupuncture needle must have likely breached the epidural space, thus creating a tract for bacterial invasion. Kinders et al. recognized epidural catheter insertions being complicated by epidural abscess formation by direct inoculation [15], and we suspect acupuncture may similarly provide bacteria with a route of invasion. In their study they have also reported patients having the epidural abscesses in a range of 1-60 days after the procedure [15]. Although our patient had neck pain prior to the acupuncture therapy, her symptoms changed after the procedure quite rapidly, from a mechanical nature to that of constant pain and ache, and hence we believe that the timeline is suggestive of acupuncture possibly being the predisposing factor.

Our patient only had acupuncture for her neck and shoulders, and not to the other parts of the spine, however she also developed a lumbar epidural abscess. We suspect that this may have come from haematogenous seeding from the blood as her blood cultures grew the same organism.

Our patient was not immune-compromised as is usually the case with spinal epidural abscesses [6]. Also the practice of acupuncture in Singapore is reserved for physicians, dentists and traditional Chinese medicine practitioners, and from the patient's history it is unlikely that she went to an unregistered practitioner for the acupuncture. This raises the concern that even in accredited institutions or clinics, the risk of deep infection remains with acupuncture needles.

## Conclusion

Spinal epidural abscesses are a rare and possibly devastating complication of acupuncture. A high index of suspicion should be present in patients who present with symptoms and signs of infection and neurological compromise. A rapid diagnosis and surgical drainage with intravenous antibiotics are the cornerstones of management and may prevent or reduce permanent disabilities. Individuals who undergo regular acupuncture therapy should be made aware of this possible complication.

## References

- Koppenhaver S, Walker M, Smith R, Booker J, Walkup I, et al. (2015) Baseline Examination Factors Associated With Clinical Improvement After Dry Needling in Individuals With Low Back Pain. J Orthop Sports Phys Ther: 1-31.
- Van Tulder M, Furlan A, Gagnier J (2005) Complementary and alternative therapies for low back pain. Best Practice & Research Clinical Rheumatology 19: 639-654.
- Phoon W, Fong N, Lee J (1988) History of blood transfusion, tattooing, acupuncture and risk of hepatitis B surface antigenaemia among Chinese men in Singapore. Am J Public Health 78: 958-960.
- Carron H (1974) Complications of Acupuncture. JAMA 228: 1552-1554.
- Bang M, Lim S (2005) Paraplegia caused by spinal infection after acupuncture. Spinal Cord 44: 258-259.
- Yazawa S, Ohi T, Sugimoto S, Satoh S, Matsukura S (1998) Cervical Spinal Epidural Abscess Following Acupuncture: Successful Treatment with Antibiotics. Intern Med 37: 161-165.
- Yang C, Hsu S, Liu J, Hueng D (2014) *Serratia marcescens* Spinal Epidural Abscess Formation Following Acupuncture. Intern Med 53: 1665-1668.
- Yu H, Lee K, Kang H, Roh S (2013) Teaching NeuroImages: Multiple epidural abscesses after acupuncture. Neurology 80:169.
- Lee J, Cho J, Jo D (2012) Cervical epidural abscess after cupping and acupuncture. Complementary Therapies in Medicine 20: 228-231.
- Darouiche R, Hamill R, Greenberg S, Weathers S, Musher D (1992) Bacterial Spinal Epidural Abscess. Medicine 71:369-385.
- Ishibe M, Inoue M, Saitou K (2001) Septic arthritis of a lumbar facet joint due to pyonex. Archives of Orthopaedic and Trauma Surgery 121: 90-92.
- Lee S, Chee S (2002) Group B Streptococcus endogenous endophthalmitis. Ophthalmology 109: 1879-1886.

**Citation:** Meng Goh JK, Meng Yeo NE, Ling Fong P, Mun Yue W, Beng Tan S, et al. (2016) Cervico-Thoracic Epidural Abscesses Following Acupuncture Therapy - An Uncommon but Potentially Devastating Complication. *J Clin Case Rep* 6: 819. doi: [10.4172/2165-7920.1000819](https://doi.org/10.4172/2165-7920.1000819)

- 
13. Yang C, Hsu S, Liu J, Hueng D (2014) *Serratia Marcescens* Spinal Epidural Abscess Formation Following Acupuncture. *Intern Med* 53:1665-1668.
  14. Yao Y, Hong W, Chen H, Guan Q, Yu H et al. (2016) Cervical spinal epidural abscess following acupuncture and wet-cupping therapy: A case report. *Complementary Therapies in Medicine* 24:108-110.
  15. Kindler C, Seeberger M, Staender S (1998) Epidural abscess complicating epidural anesthesia and analgesia: An analysis of the literature. *Acta Anaesthesiologica Scandinavica* 42: 614-620.