—Report on Experiments and Clinical Cases—

A Case of Cervical Spondylitis during Stellate Ganglion Block

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Abstract

We report a case of cervical spondylitis that developed during treatment with a series of stellate ganglion blocks. A 65-year-old man was scheduled for 10 sessions of stellate ganglion block for treatment of right-sided deafness of sudden onset due to Ramsay Hunt syndrome. Administration of betamethasone was started 5 days before the first block and was continued for 6 weeks. After disinfection of the skin by povidone iodine, each stellate ganglion block was performed via the paratracheal approach. The first four block sessions were uneventful. However, during the fifth session, the patient complained of neck pain. After 10 sessions, the deafness improved and the patient was discharged from the hospital. Three weeks after discharge, he was readmitted for sustained neck and bilateral shoulder pain and numbness of the right hand. Cervical roentgenography and magnetic resonance imaging revealed spondylitis of C5 and C6. Antibiotics were administered for 2 weeks. The inflammatory variables on blood examination improved, but cervical roentgenography performed 8 weeks after the last block showed that the vertebral body of C6 was nearly completely destroyed. Four months after the last block, the vertebral bodies of C5 and C6 had fused. This case indicates that when stellate ganglion block is performed in patients who are taking a corticosteroid, the disinfection procedure must be strictly followed and that if the patient complains of neck or shoulder pain, cervical roentgenography or magnetic resonance imaging or both should be immediately performed to assess the presence of spondylitis.
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Key words: stellate ganglion block, cervical spondylitis

Introduction

Stellate ganglion block is frequently performed for treatment of pain in the neck and for treatment of ischemia and pain in the arm[1]. Although stellate ganglion block via the paratracheal approach is easy to perform, complications, such as dural puncture and intercostal neuralgia, have been reported[2,3].

Spondylitis caused by pyogenic infection is a rare complication of stellate ganglion block but may lead to fracture of the vertebral body and paraplegia[4]. We report a case of cervical spondylitis that developed during treatment with a series of stellate ganglion blocks in a patient who was receiving betamethasone.

Case Report

A 65-year-old man (height 162 cm, weight 90 kg)

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Fig. 1 Neck roentgenogram obtained before administration of the first stellate ganglion block. No remarkable abnormalities are seen.

Fig. 2 Neck roentgenogram obtained at the time of admission to the orthopedics service, 3 weeks after completion of ten sessions of stellate ganglion block. The intervertebral space between C5 and C6 is narrow.

was admitted to the hospital for treatment of right-sided deafness of sudden onset due to Ramsay Hunt syndrome. He had no history of diabetes or immunodeficiency. Because the otolaryngologist had previously treated a patient with infection of the spine at a different hospital, cervical roentgenography is performed in patients who are candidates for stellate ganglion block at our hospital. Cervical roentgenography revealed that the patient did not have a fracture or distraction of vertebrae (**Fig. 1**). The patient was scheduled for 10 sessions of stellate ganglion block (3 sessions per week). He had been receiving betamethasone, 1.5 mg per day, for treatment of the deafness since 5 days before the first block. The betamethasone was gradually decreased in dosage and was administered for a total of 6 weeks (until re-admission to the hospital).

The stellate ganglion blocks were performed via the paratracheal approach in the holding floor of the operating room. The patient's neck was first disinfected with 10% povidone iodine. Thirty seconds after sterilization, the povidone iodine was removed with 10% alcohol. The trachea and carotid pulse were gently palpated by placing two fingers on the skin between the sternocleidomastoid muscle and the trachea to find the most prominent cervical transverse process, i.e., C6 or the Chassaignac tubercle, which lies at the level of the cricoid cartilage. A 23-gauge, short-bevel, 4-cm-long needle was advanced through the skin and underlying tissue until it hit bone. Then, 5 m*l* of 1% lidocaine was injected. The first four sessions of stellate ganglion block were uneventful. During the fifth session of block, the patient complained of mild bilateral shoulder pain during injection of local anesthetics. Starting with the sixth session, the needle was changed to a 25-gauge needle; however, the patient complained of bilateral shoulder and neck pain during the sixth to tenth sessions. To treat the neck and shoulder pain, dicrofenac, 50 mg, was administered. After 10 sessions of block, the hearing of the affected ear improved. During the

Fig. 3 Magnetic resonance image of the neck obtained 4 weeks after completion of the ten sessions of stellate ganglion block. The image shows high intensity in the T2-weighted image, suggesting spondylitis of C5 and C6.

Fig. 4 Neck roentgenogram obtained 8 weeks after completion of the ten sessions of stellate ganglion block. The vertebral body of C6 is nearly destroyed (**arrow**).

administration of the 10 blocks, the patient did not have febrile symptoms at any time. After completion of the series of 10 blocks, the patient was discharged from the hospital. Three weeks after discharge, the patient presented to the emergency room with sustained neck and bilateral shoulder pain. The patient also complained of neck stiffness and numbness of the right thumb. A cervical roentgenogram revealed narrowing of the C5/C6 interspace (**Fig. 2**). Magnetic resonance imaging (MRI) of the neck performed 1 week later revealed high intensity in T2-weighted images, which suggested spondylitis of C5 and C6 (**Fig. 3**). Blood examination at the time of admission to the orthopedics service revealed a white blood cell count (WBC) of 11,100/m*l* (normal range, 4,000～8,500/m*l*) and C-reactive protein (CRP) level of 0.92 mg/d*l* (normal range,＜0.5). The patient's neck was fixed with a neck brace. Intravenous administration of an antibiotic, cefazolin 2 g/day, was performed for 14 days. After completion of antibiotic administration, the WBC and CRP values decreased to the normal range. In the neck roentgenogram obtained 8 weeks after completion of the blocks, the vertebral body of C6 was nearly destroyed (**Fig. 4**). Four months after completion of the series of stellate ganglion blocks, MRI indicated that the inflammation had healed and a neck roentgenogram revealed fusion of the vertebral bodies of C5 and C6 (**Fig. 5**).

Discussion

We presented a case of spondylitis that developed during treatment with a series of stellate ganglion block. The most common symptoms of cervical spondylitis are pain and numbness of the shoulders, and a febrile response is seen in fifty percent of cases[4]. The onset of spondylitis may be acute, subacute, or insidious[5]. In the case of pyogenic infection, the symptoms of spondylitis develop acutely. The diagnosis of cervical spondylitis can be made by MRI or roentgenography: MRI of the neck

Fig. 5 Neck roentgenogram obtained 16 weeks after completion of the ten sessions of stellate ganglion block. The vertebral bodies of C5 and C6 are fused.

shows high intensity in T2-weighted images, and neck roentgenography shows narrowing of the vertebral interspace or a retropharyngeal abscess. Since spondylitis may lead to bone destruction, fracture, and paraplegia, it must be quickly diagnosed and treated with antibiotics.

Our patient complained of shoulder pain during the course of treatment with stellate ganglion block. The development of shoulder and neck pain suggests the possibility of acute pyogenic infection of the spine[6]. However, our patient did not present febrile symptoms, and the shoulder pain was mild. Thus, we might have missed the opportunity of performing roentgenography or MRI during the course of stellate ganglion blocks and we would not have found the spondylitis. If a patient who is undergoing stellate ganglion block develops symptoms of pyogenic infection, roentgenography and MRI of the neck should be performed immediately.

Our patient did not have evidence of diabetes or immunodeficiency. However, he was treated with betamethasone for 6 weeks. Among patients who are receiving chronic steroid therapy, the risk of infection is related to the dose of steroid and the duration of steroid therapy[7]. The immunological response in our patient may have been impaired. In the present patient, the skin was disinfected with povidone iodine prior to insertion of the needle for stellate ganglion block. Even if the skin is disinfected by povidone iodine, the needle may become contaminated by deep skin flora[8]. Also, the bottles of povidone iodine that we used were not always new. A previous study demonstrated that povidone iodine solution from a previously opened bottle provided less effective skin decontamination than that from a new bottle[9]. In the present case, the needles used in the stellate ganglion blocks may have become contaminated by deep skin flora or the povidone iodine solution may have been contaminated in bottles in which the cap had been previously opened. In patients who are suspected of having an impaired immunological response and who are scheduled for stellate ganglion block, special precautions should be taken to minimize the risk of infection such as opening a new bottle of povidone iodine or adding another type of disinfectant such as chlorhexidine.

The present case indicates that when performing stellate ganglion block on patients who are receiving steroid therapy, which may increase the risk of infection, disinfection procedures should be strictly followed. If the patient develops shoulder pain or neck pain, roentgenography and MRI of the neck should be immediately performed to assess the presence of spondylitis.

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