The incidence of spinal infections developing after epidural catheterization has increased as a result of the widespread use of catheterization as an analgesic in cancer patients and for treatment purposes in chronic lumbar pain, besides their use in spinal anesthesia. Meningitis, epidural abscess, discitis, osteomyelitis and paraspinal abscess may develop due to epidural catheter use.

We introduce a case of spondylodiscitis following epidural catheter placement, which has been reported rarely in the literature. The possible occurrence mechanisms of discitis are discussed to choose a treatment strategy.

Case Report. A 54-year-old female patient who had been operated for L4-L5 disc herniation 13 years ago was evaluated in our clinic for very severe lumbar pain. Her anamnesis showed occasional lumbar pain complaint for one year. It was learnt that she had had an epidural catheter inserted at the L3-L4 level, and she had been administered intermittent steroid and a local anesthetic agent for 18 days in the algology clinic due to aggravation of her lumbar pain 2 months ago. Laboratory analysis conducted on the day lumbar catheter was placed showed that erythrocyte sedimentation rate (ESR) was 25 mm/hour and her blood count and biochemical data were normal. It was also discovered that 8 days after epidural catheter was inserted, she developed urinary system infection due to Escherichia coli (E.coli) and received antibiotic treatment. It was reported that Staphylococcus epidermidis (S.epidermidis) reproduced in the samples were taken from the entry point of the catheter and from the catheter itself. When she presented at our clinic, her white blood cells were normal in the blood count and her ESR was 110 mm/hour. There was no remarkable pathology on direct radiography. Magnetic resonance imaging showed an image consistent with spondylodiscitis hypointense in T1-weighted images (Figure 1) and hyperintense in T2-weighted images at the level of T11-12. Her body temperature was normal, and there was no reproduction in blood cultures. Whole body scintigraphy did not show any pathology except for pathological activity collection at T11-12,

From the Department of Neurosurgery (Erol, Kaplan, Ozveren) and the Department of Clinical Microbiology (Kizirgil), Firat University, School of Medicine, Elazig, Turkey.

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Address correspondence and reprint request to: Dr. Fatih S. Erol, Firat Universitiesei, Tip Faktlesi, Norosirurji Anabilim Dali, Elazig, Turkey. Tel. +90 (424) 2333555 Ext. 1180. Fax +90 (424) 2388096. E-mail: fserol@yahoo.com
Figure 1 - T1-weighted magnetic resonance image sagittal view showing hypointensity at the corpus vertebra of T11 and T12 due to infection. Also, there is disc degeneration and bulging at the same level.

L1. There was no anomaly in peripheral staining and tumor marker levels. The patient was given wide spectrum antibiotic and immobilization treatment for 10 weeks. The patient did not have any complications throughout the treatment and was discharged upon recovery.

Discussion. Diabetes, the presence of a systemic infection at the time of catheterization, catheter type, number of interventions, the period for which catheter is kept at the epidural distance are the main risk factors for the development of spinal infections due to epidural catheter use. Immune system failure in cancer patients in whom epidural catheterization is used as an analgesic and administration of steroids via epidural catheter for treatment purposes in chronic lumbar pain, as was the case in our patient, increase the risk of infection. Previous studies have reported 2 essential ways by which the mechanisms of development are activated: 1) hematogenous spreading from another infection focus and 2) direct spreading of microorganisms to the area via the catheter. However, it is difficult to identify which way is active in cases such as ours, in whom the clinical status presents itself in a complex manner. After epidural anesthesia, there appears a loss in the tonus of urinary tract and this condition facilitates the development of urinary system infection. Infections of the urinary tract and other pelvic organs may spread to the spinal column via Batson’s venous plexus where there is retrograde venous blood flow when intraabdominal pressure increases.

Steffen et al carried out a microbiological analysis of 502 epidural catheters inserted for postoperative analgesics and reported that microorganisms were reproduced in the cultures of 29 (5.8%) catheters. Other important findings of the study are that reproduction was seen when the period for which the catheter is kept inserted is 4 days and longer and that the bacteria most commonly reproduced were S.epidermidis and Staphylococcus aureus (S.aureus). Smitt et al also reported in their studies that the microorganisms that most rapidly reproduced in the culture were S.epidermidis and S.aureus in 11 patients who developed epidural abscess. The fact that the responsible microorganism in most spinal infection cases due to epidural catheter is located on normal skin brings the mechanism of direct contamination via catheter to the fore.

In our case, spondylodiscitis was at T11-T12, further away from the place where the catheter was inserted (L3-L4). As Smitt et al note in their study, it is remarkable that spinal epidural abscesses are located on the posterior of the spinal canal without discitis or osteomyelitis in all cases. Our case did not have any infection located on the posterior of the spinal canal or along the trace of the catheter. She had urinary system infection (E.coli) history in the period when the catheter was kept inserted. All these data support hematogenous spreading as the physiopathological mechanism of our case.

It was reported that there was S.epidermidis reproduction in the small amount of pyogenic material that surrounded the skin lesion where the catheter entered the skin, and in the culture studies conducted. The epidural catheter’s being kept inserted for 18 days is another risk factor for contamination in our case. Besides, peridural distance has a rich venous network that can carry microorganisms to long distances. These data suggest direct contamination of the spinal area via the catheter. However, a problem with this mechanism is that there is the possibility of the catheter’s being contaminated by microorganisms when it passes through the skin and subcutaneous soft tissue as it is pulled out. In addition, it was reported that although catheters were contaminated by microorganisms in most cases in whom epidural catheters were kept for 0-12 days, spinal infection did not develop and that there was not any direct relation between the development of infection and catheter contamination.

Even though microscopic examination of the material we collected from the spondylodiscitis area in the accompaniment of computed tomography in our case was consistent with infection, no microorganisms were reproduced in culture studies. Therefore, it could not be decided which route was more active in the physiopathology. Thus, in consideration of both routes in the physiopathological mechanism, a wider spectrum antibiotic treatment that was effective, especially on E.coli and S.epidermidis, was started.
The nature of lumbar pain may change in spondylodiscitis, and the physician may not notice this change due to chronic patients having psychic effects. A marked increase in ESR, as was seen in our patient, may help the diagnosis of spinal infections that develop after epidural catheter. Therefore, periodical ESR studies should be carried out in the follow-up of patients in whom epidural catheter is inserted.

In conclusion, the route effective in physiopathology may not always be determined in cases of spondylodiscitis which develops due to epidural catheter use and where no microorganisms reproduce. This factor makes it difficult to decide on a treatment strategy.

References