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Brief Clinical Report

The Role of Laparoscopic Biopsies in Lumbar Spondylodiscitis

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Summary: Infection of an intervertebral disk is a serious condition. Diagnosis often is elusive and difficult. It is imperative to obtain appropriate microbiological specimens before initiation of treatment. The authors describe a 51-year-old woman with lumbar spondylodiscitis that was because of infection after the placement of an epidural catheter for postoperative analgesia. A spinal magnetic resonance imaging confirmed the diagnosis, but computed tomography-guided fine needle biopsy did not provide adequate material for a microbiologic diagnosis. Laparoscopic biopsies of the involved disk provided good specimens and a diagnosis of *Propionibacterium acnes* infection. The authors believe that this minimally invasive procedure should be performed when computed tomography-guided fine needle biopsy does not provide a microbiologic diagnosis in spondylodiscitis. **Key Words:** Laparoscopy–Spondylitis–Spondylodiscitis.

Infection of an intervertebral disk after surgery or because of hematogenous spread from a distant site of infection is a serious condition. Appropriate antibiotic therapy must be initiated as soon as possible to obtain quality results (1). It is essential to obtain adequate specimens for culture and sensitivity studies so that antibiotic therapy can be designed to treat the infecting organism. Among the techniques to obtain these specimens, CT-guided fine-needle aspiration has a diagnostic yield of 30% to 65% (1–3). Laparoscopy is a minimally invasive technique that allows high-quality surgical specimens to be obtained for histology and microbiology.

CASE REPORT

A 51-year-old woman underwent transabdominal hysterectomy and adnexectomy, with use of an epidural catheter for postoperative analgesia. Two months after surgery, the patient noted the rapid occurrence of lumbar pain that irradiated bilaterally to the groin and a low-grade fever. Standard postero anterior and lateral lumbar spine films showed bilateral posterior arthritis that involved the L4–L5 and L5–S1 joints, which were reported to be compatible with spondylitis of indeterminate origin. A spinal magnetic resonance imaging showed spondylolisthesis of L5-S1, with involvement of the intervertebral disk and soft tissue swelling in front of the L5 joint and the sacrum and within the spinal canal (Fig. 1). A left paravertebral abscess also was shown. A presumptive diagnosis of spondylodiscitis was made. CT-guided fine needle aspiration was performed. No bacteria were seen on a Gram stain, and culture results were negative.

Laparoscopy was performed during general anesthesia with use of three ports (a 10-mm periumbilical camera port, a 5-mm suprapubic port for the grasper, and a 10-mm left iliac fossa port for the Kerrison biopsy forceps). After displacement of the small bowel to the upper abdomen, the posterior peritoneum was incised below the aortic bifurcation, and multiple biopsies were performed from the L5–S1 disk with biopsy forceps. The posterior peritoneum was closed with interrupted resorbable sutures to minimize the risk of contamination of the peritoneal cavity, which was washed with 2 L of saline before closure. There were no intraoperative or postoperative complications. *Propionibacterium acnes* were grown in the specimens, which was sensitive to clindamycin and to penicillin G. No acid-fast organisms were detected. Clinical and laboratory signs of infection

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FIG. 1. This T1-weighted magnetic resonance imaging shows a hyposignal of the adjacent parts of L5 and S1, with associated disk destruction and extension of the abscess anteriorly and posteriorly.

abated with use of antibiotics. However, the patient still has lower back pain, which is aggravated by housework, and has not returned to work.

DISCUSSION

Spondylodiscitis is the infection of an intervertebral disk and the adjacent bone. This infection usually results from hematogenous seeding from a distant site of infection, but it can result from a postoperative infection (1). Spondylodiscitis can be a complication of epidural anesthesia (2,4). Spondylodiscitis can be caused by tuberculosis, other bacteria, fungi, or parasites (5). Tuberculous spondylodiscitis (Pott disease) is a significant problem in the Third World, and sensitivity studies are essential when treating mycobacterial disease because of the emergence of resistant organisms (6). The diagnosis of spondylodiscitis often is difficult, and a high degree of suspicion is necessary to diagnose correctly. Patients commonly present with increasing back pain, low-grade fever, and localized tenderness. They often have an increased erythrocyte sedimentation rate (1–3). Initially, standard PA and lateral spine films are normal. Technetium or gallium bone scans show focal activity early in the course of the disease (7). Magnetic resonance imaging shows signs of vertebral and disk disease and soft tissue involvement early in the course of the disease (7). These findings are highly specific, and very useful in determining whether surgical intervention will be necessary. If magnetic resonance imaging cannot be performed, spiral CT is the best option (7).

Successful treatment depends on precise diagnosis of the infecting agent. Microbiologic diagnosis occasionally can be made from peripheral blood cultures (3,5). When such a diagnosis is not possible, CT-guided fine-needle aspiration can provide adequate microbiologic specimens in 18% to 86% of cases (1–3). This procedure can be repeated if results are negative. However, if a precise diagnosis remains unavailable, surgery should be considered early to provide a microbiologic diagnosis (1). Laparoscopy is a minimally invasive procedure that provides specimens similar to those obtained with use of laparotomy. After etiologic diagnosis has been made, the best treatment option can be chosen, which may include surgery and antibiotics (1,3,5,8).

CONCLUSION

Spondylodiscitis is a disease that presents diagnostic problems. Bone scans are the earliest predictors of disease. Magnetic resonance imaging is the most sensitive diagnostic method. CT-guided fine-needle aspiration can obtain sufficient material for etiologic diagnosis and sensitivity studies. However, if the material is insufficient for diagnosis, laparoscopy with biopsies of the involved disk or vertebra can be minimally invasive and could improve the diagnostic yield.

REFERENCES

1. Ozuna RM, Delamarter RB. Pyogenic vertebral osteomyelitis and postsurgical disc space infections. *Orthop Clin North Am* 1996;27: 87–93.

2. Bontoux D, Codello L, Debiais F, et al. Spondylodiscitis infectieuses. Analyse d'une série de 105 cas. *Rev Rhum Mal Osteoartic* 1992;59:401–7.
3. Perronne C, Saba J, Behloul Z, et al. Pyogenic and tuberculous spondylodiscitis (vertebral osteomyelitis) in 80 adult patients. *Clin Infect Dis* 1994;19:746–50.
4. Marsaudon E, Berthier F, Eyhorn-Berthier C. Complications infectieuses après anesthésie péridurale obstétricale. *J Gynecol Obstet Biol Reprod* 1997;26:159–62.
5. Sapiro FL. Microbiology and microbial therapy of spinal infections. *Orthop Clin North Am* 1996;27:9–13.
6. Bloom BR. Back to a frightening future. *Nature* 1992;358:538–9.
7. Rothman SLG. The diagnosis of infections of the spine by modern imaging techniques. *Orthop Clin North Am* 1996;27:15–31.
8. Parker LM, McAfee PC, Fedder IL, et al. Minimally invasive techniques to treat spinal infections. *Orthop Clin North Am* 1996; 27:183–99.