

Discogenic Abdominal Pain

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There have been several reports about abdominal pain due to discitis in children or thoracic disc herniation. However, none of them could verify causal relationship between disc disease and abdominal pain clearly. The authors report a patient with discogenic abdominal pain who had disc degeneration at lower lumbar level without definite protrusion or any evidence of inflammation. We could reproduce the abdominal pain by using discography. The patient was treated by percutaneous disc decompression successfully.

KEY WORDS : Discogenic · Abdominal pain.

Introduction

There have been several reports about abdominal pain due to discitis in children^{4,12)} or thoracic disc herniation⁸⁾. However, to the authors' knowledge, this is the first report of a patient with discogenic abdominal pain. The patient had degenerative disc disease without definite disc protrusion or any evidence of discitis. In addition, we could reproduce the abdominal pain by using discography, and were able to verify the causal relationship between lumbar disc and abdominal pain by treating the patient with laser assisted percutaneous disc decompression.

Case Report

A 51-year-old lady was admitted with 2-year history of pain in the lower abdomen and groin area. Her pain was intermittent, and was relieved by lying down. Long walk or prolonged sitting usually aggravated her symptoms. The pain was not accompanied by oral intake. The abdomen was soft. Her white cell count and erythrocyte sedimentation rate were within normal limits. Abdomen plain films and ultra-sonography showed no abnormality. The patient had a long history of low back pain that had begun 10 years ago. She underwent percutaneous discectomy for lumbar disc herniation at L4-5 level 10 years ago. After the operation, her back and leg pain was markedly improved. Physical examination revealed

mild back tenderness. Straight leg raising test showed no limitation. Plain radiographs of the lumbar spine demon-

strated segmental instability at L3-4 level and mild narrowing of the L4-5 disc space. Magnetic resonance imaging (MRI) of the lumbar spine demonstrated disc degeneration at L3-4, L4-5, and L5-S1 levels (Fig. 1, 2). We performed provocative discography at L3-4, L4-5, and L5-S1 levels by using water-soluble contrast media (Fig. 3). Injection of contrast media did not provoke pain at L3-4 level. Discography of L4-5 level revealed leaking of dye into the epidural space and fissures in disc space. The pat-



Fig. 1. T2-weighted sagittal magnetic resonance image demonstrating disc degeneration at L3-4, L4-5, and L5-S1 levels.

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Fig. 2. T2-weighted axial magnetic resonance image at L5-S1 level shows no definite protrusion of the disc.

ient complained of back pain (visual analogue scale score 5) during the procedure. Discography of L5-S1 level could reproduce the pain in the lower abdomen and groin area, and the intensity of pain was proportional to the amount of the dye injected. As the intensity of pain was

very severe (visual analogue scale score 9), the patient even suffered from syncope due to pain. We performed percutaneous disc decompression and thermoannuloplasty by using Ho : YAG laser (Lumenis, Inc., New York, USA) and forceps at L5-S1 level. The patient's pain in the abdomen and groin area has gone immediately after the procedure.

Discussion

Generally, lumbar disc disease is known to cause back pain, leg pain, and sometimes bladder and bowel dysfunction⁷. It is also known that the patients with degenerative disc in the lower lumbar levels sometimes complain of pain in the groin¹⁰. Takahashi et al verified the fact that neural connection between the ventral portion of the lumbar disc and groin skin exists in experimental animals¹⁰. It is known recently that electrical stimulation of the rat lumbar spine may induce reflex action potentials in the nerves to the lower abdomen⁹. Discogenic pain is known to be similar to visceral pain in certain respect⁶. Nakamura et al suggested that sympathetic system through the L2 nerve root is the main afferent pathway of discogenic low-back pain⁶. Although there is a controversy over the origin of sinuvertebral nerve^{1,5,6}, it is obvious that sympathetic system plays an important role in afferent pathway of discogenic low-back pain. Absence of ventral protrusion of the disc and relief of abdominal pain after disc decompression in our case deserve special attention, as we can infer that increased intradiscal pressure might have induced abdominal pain. As we know, pain proportional to intraluminal pressure is one of outstanding characteristics of visceral pain. Synthetically thinking, we can suspect that lumbar disc have a similarity to abdominal viscera in the light of afferent pathway of pain. Currently, the role of discography remains controversial, and the pain of discography is multifactorial¹¹. However, it is obvious that the concept of "discogenic pain" exists. Although the mechanism of pain provoked by discography



Fig. 3. Artero-posterior (A) and lateral (B) C-arm fluoroscopic images of lumbar discogram. In L4-5 level leakage of contrast media into the epidural space is shown. Fissured extension of contrast media within the annulus is seen in L5-S1 level.

has not been clearly elucidated yet, many reports suggest that pain of discography is related directly or indirectly to increased intradiscal pressure^{2,11}. Anterior lumbar interbody fusion (ALIF), posterior interbody fusion (PLIF), and total disc replacement (TDR) are well known surgical modalities for discogenic low back pain¹³. However, the complication rates of these conventional methods are known to be significantly higher than that of endoscopic approach³. Besides, it is not easy for surgeon to choose ALIF, PLIF, or TDR without hesitation in case of the patients who have discogenic back pain and instability or severe disc degeneration at adjacent level. Hence, minimally invasive procedures including endoscopic discectomy can be a safe alternative to conventional approaches in such circumstances. But, it is not certain yet whether disc decompression itself or thermal modulation of annulus by using Ho : YAG laser relieved the abdominal pain in our case. Although Knight et al already reported that laser-assisted endoscopic approach could be an effective treatment modality for discogenic low back pain³, future clinical studies will be required to ascertain the safety and efficacy of percutaneous endoscopic disc decompression and thermoannuloplasty as a treatment modality for discogenic pain.

Conclusion

Lower lumbar disc disease without definite protrusion or inflammation can induce abdominal pain. It seems like that discogenic abdominal pain is related to intradiscal pressure. Further research on this type of pain would clarify the mechanism of discogenic pain and the neural connection between abdomen and lower lumbar disc.

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