



A COMBINATION OF THREE NERVE ENTRAPMENT SYNDROMES, WHICH WAS DIFFICULT TO DIFFERENTIATE FROM A VERTEBRAL COMPRESSION FRACTURE

Kentaro Kakura, Yukinori Harada, Taro Shimizu

Department of Diagnostic and Generalist Medicine, Dokkyo Medical University, Mibu, Japan

Corresponding author: Yukinori Harada e-mail: yharada@dokkyomed.ac.jp

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ABSTRACT

Introduction: This report describes the educational case of a patient who developed three different cutaneous nerve entrapment syndromes at the same level of the thoracic nerve, which was difficult to differentiate from a vertebral compression fracture.

Case Description: A 74-year-old woman presented with right lower abdominal pain, followed by back and flank pain. During later assessment, anterior, posterior and lateral cutaneous nerve entrapment syndromes at the Th11 level were diagnosed.

Conclusion: A combination of three different cutaneous nerve entrapment syndromes can occur in the same patient.

KEYWORDS

Anterior cutaneous nerve entrapment syndrome, lateral cutaneous nerve entrapment syndrome, posterior cutaneous nerve entrapment syndrome

LEARNING POINTS

- A combination of three cutaneous nerve entrapment syndromes can occur in the same patient.
- Cutaneous nerve entrapment syndromes are difficult to differentiate from vertebral compression fractures.

CASE DESCRIPTION

A 74-year-old woman presented to our hospital with a 2-year history of right lower abdominal pain and a 4-day history of right lower back pain. The patient also had a 4-year history of lower back pain since the occurrence of osteoporotic vertebral compression fractures at the levels of Th12 and L1, but reported that the recent right lower back pain was distinct. Abdominal and lower back pain persisted at rest and

worsened with physical activity. The patient denied vomiting, diarrhoea or neurological symptoms. Her medical history included appendectomy and lumbar spine osteoarthritis. She was allergic to scallops. Her family history was significant for brain tumours in her brother and mother. She had a 25 pack-year smoking history but had stopped smoking 30 years previously. Her alcohol consumption consisted of 1.4 beers per day.



Vital signs were normal on examination. Tenderness was observed in the right lower abdomen without guarding and there was light hypoalgesia in the tender area. Mild tenderness around the lumbar spine was observed at the L3 and L4 levels. There was no costovertebral angle tenderness and Carnett's sign was negative. Laboratory tests and abdominal ultrasonography revealed no abnormalities. A contrast-enhanced computed tomography (CT) scan of the abdomen revealed a uterine myoma and old vertebral fractures at the Th12 and L1 levels. Tramadol, acetaminophen and celecoxib were administered and the pain had nearly resolved the following day. The patient was discharged with no specific diagnosis.

The patient returned to the outpatient clinic 2 months after discharge as the right lower abdominal and lower back pain had recurred. Tenderness was noted in the right lower abdomen, and Carnett's sign was positive. An abdominal plain CT scan showed no abnormalities. A trigger-point injection with 10 ml of 1% lidocaine alleviated the abdominal pain. However, the right lower abdominal pain recurred after several days.

The patient returned to our outpatient clinic 3 months later as persistent abdominal pain had returned. Physical examination and blood and urine tests revealed no abnormalities. Lumbar magnetic resonance imaging showed mild disc bulging at the L2/3 and L5/S1 levels and mild stenosis of the bilateral intervertebral foramen at the level of L5/S1. The patient was therefore referred to our orthopaedic department. However, lumbar disc herniation and stenosis of the bilateral intervertebral foramen were excluded as causes of her pain.

Right flank and lower back pain developed 18 months later in addition to right lower abdominal pain. The patient visited our outpatient clinic again. On examination, no rash was observed. There was localised tenderness on the right edge of the rectus abdominis muscle at the level innervated by the Th11 intercostal nerve. Carnett's sign and the pinch test at the tender point were positive, and hypoalgesia was observed. There was also tenderness localised to the pinpoint area right of the spinous process at Th11, and the pinch test results were positive. No tender points were detected on the right flank. Lumbar spine radiography showed the aforementioned vertebral fractures. A trigger-point injection with 5 ml of 1% lidocaine was administered at each tender point, which resolved the abdominal and lower back pain. Anterior cutaneous nerve entrapment syndrome (ACNES) and posterior cutaneous nerve entrapment syndrome (POCNES) were considered. At the 1-week follow-up, the abdominal and lower back pain had resolved, but the patient still had right flank pain. At that time, a localised tender point was detected on the mid-axial line at the level innervated by the Th11 intercostal nerve, and the pinch test was positive in the area. Since a trigger-point injection with 5 ml of 1% lidocaine at the tender point resolved the flank pain, lateral cutaneous nerve entrapment syndrome (LACNES) was considered as the cause. One month later, the

pain had not recurred. Therefore, the patient was diagnosed with ACNES, LACNES and POCNES at the level of the Th11 intercostal nerve.

DISCUSSION

In this case, three cutaneous nerve entrapment syndromes at the same spinal level developed in the same patient. ACNES, POCNES and LACNES have a similar pathology, in that branches of the cutaneous nerve are entrapped by surrounding tissues, such as muscle, owing to several mechanisms^[1]. These syndromes also have several common features: prevalence in women aged 20–50 years, right-sided dominance (except for POCNES), and frequent involvement of lower thoracic spine levels, including Th11 (Th7–12)^[2–4]. Previous studies have reported that more than one of these syndromes can develop in the same patient^[5], so the occurrence of three cutaneous nerve entrapment syndromes in this patient is possible.

Regarding the accuracy of the diagnosis, the present case fulfilled the proposed criteria for diagnosing ACNES, POCNES and LACNES, respectively^[2–4]. Differential diagnosis for ACNES, POCNES, and LACNES are broad, but the differential diagnosis for the combination of these three syndromes can be narrowed down to orthopaedic conditions, such as a vertebral compression fracture, herniated disc or spinal stenosis. In this case, herniated discs and spinal stenosis were excluded on the basis of assessment by an orthopaedist.

The most important differential diagnostic feature in this patient was the vertebral compression fracture. The patient was at high risk of osteoporotic vertebral compression fractures given her prior history. Differentiating nerve entrapment syndrome from vertebral compression fractures is difficult. Endo *et al.* described a case of Th11 vertebral compression fracture that was initially misdiagnosed as a combination of LACNES and ACNES at the level of Th11^[5]. In their patient, the pain improved following trigger-point injections, but the abdominal pain repeatedly recurred within approximately a week, and back pain developed about a month after the initial pain. This case indicates that the manifestation of a spinal deformity can be similar to that of the combination of ACNES, POCNES and LACNES. Although there is no straightforward approach to distinguish the combination of ACNES, POCNES and LACNES from vertebral compression fractures, clinicians should carefully follow-up with patients even when the pain is resolved with trigger-point injections.

CONCLUSION

A combination of ACNES, LACNES and POCNES can occur in a single patient. The differential diagnosis is challenging and includes vertebral compression fractures. Therefore, a longer follow-up period is recommended to avoid diagnostic errors.

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