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ABDOMINAL CUTANEOUS NERVE ENTRAPMENT SYNDROME: THE CAUSE OF LOCALIZED ABDOMINAL PAIN IN A YOUNG PREGNANT WOMAN

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□ **Abstract—Background: Despite the broad differential diagnosis in any patient referring with symptoms involving the chest or abdomen, a small number of conditions overshadow the rest by their probability. Chest and abdominal wall pain continues to constitute a common and expensive overlooked source of pain of unknown cause. In particular, cutaneous nerve entrapment syndrome is commonly encountered but not easily diagnosed unless its specific symptoms are sought and the precise physical examination undertaken. Case Report: A primigravida woman with unbearable abdominal pain was referred repeatedly seeking a solution for her suffering. Numerous laboratory and imaging studies were employed in order to elucidate the cause of her condition. After numerous visits and unnecessary delay, the diagnosis was finally made by a physician fully versed in the field of torso wall pain. The focused physical examination disclosed abdominal cutaneous nerve entrapment syndrome as the diagnosis, and anesthetic infiltration led to immediate alleviation of her pain. Why Should an Emergency Physician Be Aware of This?: Cutaneous nerve entrapment is a common cause of abdominal pain that is reached on the basis of thorough history and physical examination alone. Knowledge dissemination of the various torso wall syndromes is imperative for prompt delivery of suitable care. All emergency physicians should be fully aware of this entity because the diagnosis is based solely on physical examination, and immediate relief can be provided in the framework of the first visit. Wider recognition of this syndrome will promise that such mishaps are not repeated in the future.** © **2018 Elsevier Inc. All rights reserved.**

□ **Keywords—torso wall pain; abdominal pain; cutaneous nerve entrapment; soft tissue pain; chest wall pain**

INTRODUCTION

This report relays the case of a pregnant woman with pain involving the right anterior torso. Multiple medical personnel lacking experience confronting such cases failed to make the correct diagnosis, despite the ability to reach a conclusive diagnosis with history and physical examination alone. After appropriate intervention, significant symptomatic improvement was observed and much of the patient's fears were allayed. This case raises the importance of knowledge of the torso wall as a common source of pain.

CASE REPORT

A previously healthy 22-year-old primigravida woman presented to her general practitioner after a week-long hospitalization. Three weeks before, at 19 weeks of gestation, she awakened at night with severe pain. It originated between the right lower chest and upper abdomen radiating downward. It was not associated with trauma or activity. She denied any change in bowel habits, fever, or urinary symptoms. Evaluation at the emergency department she was referred to that morning disclosed mild pyuria only. She returned home with oral antibiotics. The next day her pain persisted and

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appeared constant as opposed to previously episodic and she was sent to the hospital. Upon examination there was mild tenderness without rebound over her right abdomen. She was admitted, analgesics were administered and a workup commenced. Laboratory values were normal. Abdominal ultrasound revealed a normal fetus and a small uterine myoma. Fetal monitoring was normal and the abdominal pain was found to be nonspecific. Days after her release she was sent to the emergency department for a third time by another general practitioner for persistent pain. On this last visit, she was seen by an experienced family physician. Only then did it become obvious that the tenderness originated from the torso wall. Informed consent was received and then a mixture of 5 mL 1% ezracaine and 1 mL triamcinolone acetonide (10 mg) was infiltrated into the fascial plane in a fanning fashion from the superolateral aspect into the tender zone, applying the modified technique. Immediately after the procedure, the patient reported significant improvement, which reinforced the current diagnosis. After treatment the condition resolved.

DISCUSSION

In any patient referring with symptoms involving the chest or abdomen, torso wall syndromes should be considered (1). A wide array of conditions should be considered in a patient presenting with chest pain. Despite the broad differential diagnosis (Table 1), a small number of conditions overshadow the rest by their probability. At this visit, thorough examination revealed classic "dough-rolling" or "pinch" tenderness of the abdominal wall, elicited in the region of the right costal margin, progressing inferiorly toward the midline (Figure 1A). Abdominal cutaneous nerve entrapment syndrome (ACNES) is a pain syndrome thought to be the result of entrapment of cutaneous branches of an intercostal nerve at the lateral edge of the rectus abdominis that causes severe, refractory, and chronic pain (2). The anterior cutaneous branches of the thoracoabdominal (T7–11) and subcostal (T12) nerves are the most susceptible to entrapment. These sensory nerves run in a plane between the internal oblique and transverses abdominis muscles. The thoracic nerves advance to the posterior wall of the rectus sheath and each enters a neurovascular channel in the rectus muscle to supply the skin. Each of the neurovascular channels in the rectus muscle contains a fibrous ring that should allow the anterior cutaneous nerve to pass through freely; this ring, however, can also become a site of nerve compression and ischemia resulting in symptoms of ACNES (3).

Table 1. Diagnoses to Consider as the Source of Torso Wall Pain

I. Chest or abdominal wall pain
- Cutaneous nerve entrapment syndrome, one of the most common conditions leading to this symptom
- Fibromyalgia, widespread musculoskeletal pain and tenderness, associated with depression and anxiety
- Herpes zoster neuralgia, more often with cutaneous clusters of vesicles
- Focal induration, panniculitis, fasciitis
- Nodular lesion, leiomyoma, glomangioma, metastatic carcinoma

II. Chest wall pain
- Costochondritis, multiple areas, usually in the upper costal cartilages there is no swelling
- Slipped rib syndromes, typically costal margin region
- Tietze's syndrome, costosternal, sternoclavicular, or costochondral joints, most often involving the second and third ribs, swelling usually apparent
- Sternalis syndrome, localized tenderness directly over the sternum or overlying sternalis muscle
- Inflammatory disease: rheumatoid arthritis, psoriatic arthritis, systemic lupus erythematosus, relapsing polychondritis, each usually involve additional body regions
- Xiphoidynia, typically over midline: sternal/epigastric region
- Fractures: stress, usually sports injuries from extreme biomechanical load
  - Pathological, associated with metastatic infiltration
  - Osteoporotic, may be associated with chronic corticosteroid use
- Infection, post-thoracotomy and sternotomy osteomyelitis or fistulae, septic arthritis of chest wall
- Sternoclavicular hyperostosis, swelling may be noted in designated region
- Spontaneous sternoclavicular subluxation, specifically over the sternoclavicular joint

III. Abdominal wall pain
- Abdominal wall defects:
  - Abdominal wall hernias, epigastric, Spigelian, or umbilical
  - Surgical scars, full laparotomy or trocar insertion sites after laparoscopic surgery
- Referred pain:
  - Thoracic nerve radiculopathy, disease in the T7 to T12 nerve roots
  - Thoracic spinal conditions disc prolapse or spinal cord tumors.
  - Pain generated from the ribcage and chest wall, source actually more superior anatomical sites
- Infiltration of abdominal wall
  - rectus sheath hematoma, especially suspected when under anticoagulant therapy
  - abdominal wall endometriosis
- Mechanical:
  - ribs on pelvis syndrome, mechanical friction more common with old and frail in subject with low body mass index.