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UNMASKING A SILENT OFFENDER – ANTERIOR CUTANEOUS NERVE ENTRAPMENT SYNDROME (ACNES) PRESENTING AS CHRONIC ABDOMINAL WALL PAIN

Anaesthesiology

Dr. Nazia Irshad Shaikh* Anaesthesiologist and Fellow in Chronic Pain, Department of Anaesthesiology and Chronic Pain, Bharati Vidyapeeth Deemed to be University Medical College and Hospital, Pune*Corresponding Author

Dr. Varshali Miral Keniya Professor & Head, Department of Anaesthesiology and Chronic Pain. Bharati Vidyapeeth Deemed to be University Medical College and Hospital, Pune

Dr. Uttam Sidhaye Consultant Pain Physician, Bharati Vidyapeeth Deemed to be University Medical College and Hospital, Specklin Superspeciality Clinic, Pune

ABSTRACT

Anterior Cutaneous Nerve Entrapment Syndrome (ACNES) is an underrecognized cause of chronic abdominal wall pain that is frequently misdiagnosed as visceral pathology, often resulting in extensive investigations and delayed treatment. We report a case of a 49-year-old female with persistent, localized abdominal pain of 1.5 years duration. Despite comprehensive diagnostic evaluation, no intra-abdominal pathology was identified. Clinical examination revealed a localized point of maximal tenderness with a positive Carnett's sign, supporting the diagnosis of ACNES. The patient underwent an ultrasound-guided rectus sheath block with 15 ml of 0.125% bupivacaine and 40 mg triamcinolone, resulting in marked pain relief and significant improvement in daily functioning. This case underscores the importance of considering ACNES in the differential diagnosis of chronic abdominal pain and highlights the role of ultrasound-guided rectus sheath block as an effective diagnostic and therapeutic modality.

KEYWORDS

Chronic Abdominal Wall Pain, Anterior Cutaneous Nerve Entrapment Syndrome, Ultrasound-guided Rectus Sheath Block, Entrapment Neuropathy.

INTRODUCTION

Anterior Cutaneous Nerve Entrapment Syndrome (ACNES) has emerged as an important yet frequently underdiagnosed cause of chronic abdominal pain. In many patients, symptoms are initially attributed to intra-abdominal pathology, resulting in extensive diagnostic evaluations and delays in appropriate management. Studies suggest that abdominal wall disorders account for approximately 10–20% of cases of chronic abdominal pain [1]. The anterior cutaneous branches of the lower thoracoabdominal nerves (T7–T12) course through the rectus sheath before penetrating the rectus abdominis muscle to innervate the overlying abdominal wall [2]. As these nerves pass through narrow fibrous openings and undergo a change in direction, they become susceptible to mechanical irritation and entrapment. This localized nerve compression is believed to be the primary pathophysiological mechanism underlying ACNES [1,3].

CASE REPORT-

A 49-year-old woman presented to our pain clinic with a 1.5-year history of persistent pain in the right lumbar region of the abdomen. She described her pain as dull aching, stabbing and burning in nature and was severe while getting up from bed, coughing, climbing stairs and bending forward. The patient rated her pain as 7/10 on numerical rating scale (NRS) during above mentioned activities. The pain was well localized in a circumferential manner without any radiation with a partial relief in supine position. She had pin-point tenderness just at the lateral border of rectus abdominis with allodynia and hyperalgesia. She was previously evaluated by general surgery and had undergone an open appendectomy 1 year ago with no relief. Her past work-up included a normal blood investigations, abdominal ultrasound and contrast-enhanced CT abdomen. On examination, there was point tenderness in the right lumbar quadrant (3cm lateral to the umbilicus) with a positive Carnett's sign [3]. She was already on non-steroidal anti-inflammatory drugs, muscle relaxants, tramadol, gabapentin without any relief. After ruling out intra-abdominal pathology by the evaluation of a surgeon, we suspected ACNES as there was pin-point tenderness around lateral border of rectus and a positive carnett's sign. We offered her diagnostic block to which she agreed. After consent and under strict asepsis, we used high frequency linear probe (6-13 MHz) to give ultrasound-guided Rectus sheath block using 15 ml of 0.125% bupivacaine and 40 mg triamcinolone using a 22G echogenic needle using in-plane approach. She was also advised on posture correction and activity modification. At 4-week follow-up, the patient's NRS score had decreased from 7/10 to 1/10, with significant improvement in functional activities and no requirement for additional interventions. At 1-year follow-up, the patient remained pain-free, reported sustained functional improvement, and had returned to her normal daily activities.

Figure 1- Ultrasound-guided Rectus Sheath Block.

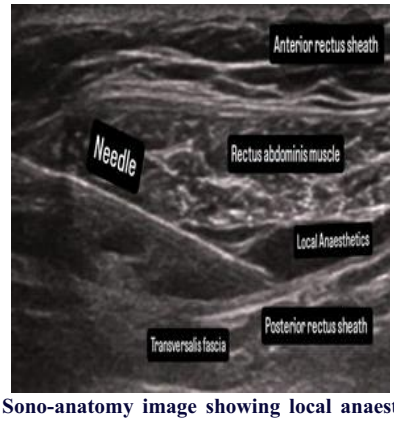

Figure 2- Sono-anatomy image showing local anaesthetic drug deposition.

DISCUSSION-

Anterior Cutaneous Nerve Entrapment Syndrome (ACNES) is a frequently overlooked cause of chronic abdominal wall pain resulting from entrapment of the terminal branches of the lower thoracoabdominal intercostal nerves as they traverse the rectus abdominis muscle and its fascial sheath. History, proper physical

examination and a positive Carnett test in the absence of any other intra-abdominal pathology should raise the suspicion of ACNES [1,4]. A complete relief with the diagnostic block usually helps to establish a diagnosis.

The diagnosis of ACNES remains largely clinical. In our patient, the presence of a localized tender point and a positive Carnett's sign, together with the absence of intra-abdominal pathology, strongly supported the diagnosis of ACNES. Similar diagnostic criteria have been emphasized by **Boelens et al**. who highlighted the importance of careful history-taking and focused physical examination in establishing the diagnosis [2,3].

Several treatment modalities have been described for ACNES, including local anaesthetic trigger-point injections, rectus sheath blocks, chemical neurolysis, pulsed radiofrequency treatment, and surgical neurectomy in refractory cases. **Sahoo and Nair** reported successful management of ACNES using ultrasound-guided TAP blocks in two patients, demonstrating significant and sustained pain relief and highlighting the value of ultrasound-guided regional anaesthesia techniques in the treatment of abdominal wall neuropathic pain[5]. Similarly, **Imajo et al.** reported a case of post-cholecystectomy ACNES in which an ultrasound-guided rectus sheath block provided only partial relief, necessitating a subsequent bilateral TAP block for adequate pain control. In contrast, our patient achieved sustained pain relief following a single ultrasound-guided rectus sheath block, supporting its effectiveness as both a diagnostic and therapeutic intervention in selected patients with ACNES [6]. In the present case, an ultrasound-guided rectus sheath block provided substantial and sustained symptomatic relief, supporting its role as both a diagnostic and therapeutic intervention. Compared with TAP blocks, rectus sheath blocks may offer a more targeted approach by directly addressing the terminal anterior cutaneous branches within the rectus sheath. Furthermore, ultrasound guidance improves procedural accuracy, facilitates visualization of relevant anatomical structures, and minimizes the risk of complications.

This case underscores the importance of maintaining a high index of suspicion for ACNES in patients with chronic localized abdominal pain and unremarkable diagnostic investigations. Early recognition and appropriate intervention can prevent unnecessary investigations and significantly improve patient outcomes. Our findings add to the growing body of evidence supporting ultrasound-guided regional nerve blocks as safe and effective treatment options for ACNES.

CONCLUSION-

ACNES is an often overlooked cause of chronic abdominal wall pain that should be considered in patients with localized abdominal tenderness and negative diagnostic investigations. This case highlights the importance of thorough clinical evaluation and demonstrates that ultrasound-guided rectus sheath block is a safe and effective diagnostic and therapeutic modality, capable of providing significant pain relief and improving patient outcomes.

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