Case Report / Olgu Sunumu

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Kinesiotaping for Mechanical Stabilization in Slipping Rib Syndrome: A Case Report

Slipping Rib Sendromunda Mekanik Stabilizasyon Amaçlı Kinesiotaping: Olgu Sunumu

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Abstract

Slipping rib syndrome (SRS) is an underrecognized cause of lower anterior chest wall pain resulting from hypermobility of the 8th-10th costal cartilages. Because the condition represents a dynamic instability, conventional imaging is often normal, and the diagnosis is primarily clinical. A 45-year-old woman presented with sharp pain localized to the right 8th-10th costal margin, aggravated by trunk movements. Laboratory and radiologic evaluations were unremarkable, and hepatobiliary causes were excluded. The patient did not respond to oral or topical non-steroidal anti-inflammatory drugs or conventional physical therapy. At follow-up, the hooking maneuver reproduced the pain and demonstrated anterior rib displacement, confirming the clinical diagnosis of SRS. Kinesiotaping was applied to provide mechanical stabilization of the affected rib segment. The patient experienced a rapid reduction in pain, with the VAS score decreasing from 8 to 3 within one week and complete symptom resolution by the third week. A recurrence one year later responded successfully to the same stabilization protocol. This case highlights the diagnostic challenges of imaging-negative SRS and suggests that targeted mechanical stabilization using kinesiotaping may be an effective, reproducible, non-invasive, conservative treatment option prior to invasive interventions.

Keywords: Slipping rib syndrome, anterior chest wall pain, kinesiotaping, rib instability, conservative treatment

Öz

Slipping rib sendromu (SRS), 8.-10. kostal kıkırdakların hipermobilitesine bağlı gelişen ve alt anterior göğüs duvarı ağrısının sıklıkla gözden kaçan bir nedenidir. Bu durum dinamik bir instabiliteyi temsil ettiğinden, konvansiyonel görüntüleme yöntemleri çoğu zaman normaldir ve tanı esas olarak klinik değerlendirmeye dayanır. Kırk beş yaşında bir kadın hasta, gövde hareketleriyle artan ve sağ 8.-10. kostal kenara lokalize keskin ağrı şikâyeti ile başvurdu. Laboratuvar ve radyolojik değerlendirmeleri normaldi ve hepatobiliyer nedenler dışlandı. Hasta oral veya topikal non-steroid antienflamatuvar ilaçlara ve konvansiyonel fizik tedavi uygulamalarına yanıt vermedi. İzlem sırasında uygulanan hooking manevrası ağrıyı yeniden oluşturdu ve kostanın anterior yönde yer değiştirdiğini göstererek SRS klinik tanısını doğruladı. Etkilenen kosta segmentinin mekanik stabilizasyonunu sağlamak amacıyla kinesiotaping uygulandı. Hastada hızlı bir ağrı azalması gözlendi; vizüel analog skala skoru bir hafta içinde 8'den 3'e geriledi ve üçüncü haftada hastanın semptomları tamamen düzeldi. Bir yıl sonra gelişen nüks aynı stabilizasyon protokolü ile başarıyla tedavi edildi. Bu olgu, görüntüleme yöntemlerinin negatif olduğu SRS'nun tanısal güçlüklerini vurgulamakta ve kinesiotaping ile sağlanan hedefe yönelik mekanik stabilizasyonun, invaziv girişimler düşünülmeden önce etkili, tekrarlanabilir ve non-invaziv bir konservatif tedavi seçeneği olabileceğini düşündürmektedir.

Anahtar kelimeler: Slipping rib sendromu, göğüs ön duvarı ağrısı, kinesiotaping, kosta instabilitesi, konservatif tedavi

Introduction

Slipping rib syndrome (SRS) is a frequently overlooked cause of lower chest wall or upper abdominal pain attributed to hypermobility of the 8th-10th costal cartilages (1,2). Excessive rib excursion may result in intermittent subluxation and irritation of the intercostal nerve, producing sharp, movement-dependent pain (3).

Because SRS represents a dynamic mechanical instability rather than a fixed structural abnormality, static imaging

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modalities such as radiography, computed tomography, or routine ultrasonography are often normal (4). Consequently, diagnosis relies predominantly on clinical evaluation. The hooking maneuver—manual traction beneath the costal margin to reproduce symptoms—is considered highly suggestive of SRS (2,5).

While surgical resection of the affected costal cartilage has been described in refractory cases (6,7), conservative approaches are recommended as first-line management (3). These include activity modification, analgesics, manual therapy, and external stabilization. However, evidence regarding structured non-invasive mechanical stabilization remains limited.

Kinesiotaping (KT) is an elastic therapeutic taping method designed to provide dynamic support while preserving functional range of motion (8). Proposed mechanisms include cutaneous mechanoreceptor stimulation, neuromuscular facilitation, and mild mechanical constraint of excessive segmental motion (8,9). Although it is widely used in musculoskeletal conditions, its role in rib instability syndromes has not been well established.

We present a case of recurrent imaging-negative SRS that was successfully managed with targeted KT stabilization after failure of conventional physical therapy.

Case Report

A 45-year-old woman presented with a three-week history of sharp, anterior chest wall pain localized to the right 8^{th}-10^{th} costal margin. Pain intensified with walking, trunk rotation, sudden movements, and rising from bed. There was no history of trauma. The patient had initiated a Pilates exercise program three months before symptom onset.

All laboratory parameters, including liver function tests, were within normal limits. In view of the patient's right upper quadrant pain, hepatobiliary pathologies were excluded based on laboratory and radiologic findings. Direct radiography, thoracic computed tomography, and ultrasonography were unremarkable. There was no clinical response to conservative medical treatment, including oral and topical non-steroidal anti-inflammatory drugs (NSAIDs) and local anesthetic injections. Prior evaluations had considered intercostal neuralgia and costochondral inflammation. Conventional physical therapy modalities, including superficial heat, transcutaneous electrical nerve stimulation, and therapeutic ultrasound, failed to provide relief. At follow-up after completion of physical therapy, the hooking maneuver reproduced the patient's sharp pain and demonstrated anterior rib displacement at the 8^{th}-10^{th} costal margin. Based on characteristic clinical findings and normal imaging, a diagnosis of SRS was established.

A biomechanical hypothesis was formulated: dynamic hypermobility of the lower costal cartilage causes repetitive intercostal nerve irritation. External mechanical stabilization was therefore considered.

The material used for KT was Kinesio® Tex Gold™ (Kinesio Holding Corp., NM, USA), a 100% cotton, latex-free, 5-cm-wide elastic band. KT was applied using a combined Y-strip and I-strip configuration (Figure 1). A Y-strip was anchored proximally, with its two tails positioned to cradle the symptomatic 8^{th}-10^{th} costal margin, leaving the painful segment centered between its limbs at minimal to moderate tension (approximately 10-20%). An I-strip was subsequently applied over the same region, with high tension across the central portion (approximately 75-100%), while the terminal ends were laid down without tension to minimize skin irritation. The configuration aimed to limit excessive anterior rib excursion while preserving functional mobility. Applications were carried out three times, at five-day intervals. Activity modification and short-term NSAID therapy were also recommended. Pain intensity decreased from 8 to 3 on the visual analog scale (VAS) within one week. By week three, the patient reported complete resolution of symptoms and full return to daily activities.

She remained asymptomatic for one year. Following intense physical exertion during sporting activity, similar symptoms recurred. Reapplication of the same stabilization protocol resulted in symptom resolution, demonstrating a reproducible therapeutic response.

Written informed consent was obtained from the patient for publication of clinical information and accompanying images.

Discussion

SRS remains an underrecognized cause of lower anterior chest wall pain, largely because its clinical presentation overlaps with more common entities such as intercostal neuralgia or costochondritis (1,3). The frequent absence of abnormalities on radiographic imaging contributes to diagnostic delay, as SRS

Figure 1. Kinesiotaping stabilization technique applied over the 8^{th}-10^{th} costal margin. A Y-strip was positioned to cradle the symptomatic segment, and an I-strip was applied under high tension across its central portion to enhance mechanical constraint while leaving the terminal ends without tension

represents a dynamic instability rather than a fixed structural lesion (4). In such contexts, clinical examination—particularly the hooking maneuver—becomes central to diagnosis (2,5). Some authors have reported secondary sonographic findings, such as reduced thickness of the ipsilateral rectus abdominis muscle, which possibly reflects chronic segmental denervation. Although such findings are not required for diagnosis, they may increase clinical suspicion in patients with unexplained chest wall pain (7). In the present case, the patient failed to respond to conventional physical therapy modalities (superficial heat, transcutaneous electrical nerve stimulation, and therapeutic ultrasound), as well as to NSAIDs and local anesthetic injections. These findings suggest that the dominant pain generator was unlikely to be primarily inflammatory or purely neuropathic. NSAIDs primarily target inflammatory pathways, whereas conventional modalities largely provide nociceptive modulation and enhance circulation. The lack of improvement with these interventions supports the possibility of a biomechanical source of repetitive mechanical irritation.

The onset of symptoms following the initiation of a Pilates program further supports a mechanical cause. Pilates involves controlled trunk flexion, rotation, and deep breathing, all of which may increase rib cage excursion. In individuals with latent costal cartilage hypermobility, repetitive loading may precipitate symptomatic instability.

KT was therefore selected as a non-rigid external stabilization strategy. Unlike rigid bracing, elastic therapeutic taping allows functional movement while providing graded mechanical constraint. Several mechanisms may account for its benefit in SRS. First, elastic recoil may limit excessive anterior rib translation, reducing repetitive intercostal nerve irritation. Second, cutaneous stimulation may enhance proprioceptive feedback and improve segmental neuromuscular control. Third, afferent stimulation may contribute to pain modulation via gate-control mechanisms (8-10).

Importantly, the patient demonstrated a rapid and clinically meaningful improvement following stabilization, with a VAS reduction from 8 to 3 within one week. Furthermore, the recurrence of symptoms after intense physical strain and their subsequent resolution following reapplication of the same taping protocol provide reproducible clinical evidence that mechanical instability is the underlying mechanism. This pattern makes it less likely that the observed improvement was solely attributable to placebo effects or non-specific analgesic mechanisms.

Although surgical costal cartilage resection has been described for refractory SRS (6), invasive approaches carry inherent risks and are typically reserved for persistent cases. The present case suggests that structured conservative mechanical stabilization should be considered before surgical intervention, particularly in imaging-negative presentations.

From a clinical standpoint, this report emphasizes that SRS should remain in the differential diagnosis of movement-related chest wall pain despite normal imaging. Lack of response to NSAIDs and conventional modalities may signal a mechanical, rather than inflammatory, etiology; targeted external stabilization can offer a low-risk, reproducible conservative treatment option. Nevertheless, several limitations of this report should be acknowledged. In a single-case observation, a causal relationship between rib stabilization and symptom resolution cannot be definitively established. Second, objective dynamic imaging was not performed to directly visualize rib hypermobility; instead, the diagnosis relied on clinical examination and reproduction of symptoms using the hooking maneuver. Although the patient demonstrated reproducible improvement following re-stabilization, the contribution of non-specific factors such as natural history cannot be entirely excluded. Prospective studies incorporating dynamic imaging and standardized stabilization protocols are needed to better define the role of non-invasive mechanical support in SRS.

Ethics

Informed Consent: Written informed consent was obtained from the patient for publication of clinical information and accompanying images.

Footnotes

Authorship Contributions

Surgical and Medical Practices: N.Y., F.A.K., Concept: N.Y., Design: N.Y., Data Collection or Processing: N.Y., F.A.K., Analysis or Interpretation: N.Y., F.A.K., Literature Search: N.Y., F.A.K., Writing: N.Y., F.A.K.

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