Integrative Management of Ureterolithiasis Musculoskeletal Involvement

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Background

Renal colic typically presents as severe flank pain due to urinary tract obstruction. Standard treatment includes hydration, analgesics, and medical expulsive therapy, but these approaches do not address associated musculoskeletal pain, which may arise due to trigger points in the surrounding musculature. Musculoskeletal involvement can intensify pain perception, prolong discomfort, and limit mobility. This case study evaluates the effectiveness of ultrasound-guided Dry Needling as a complementary intervention for renal colic with concurrent musculoskeletal dysfunction. Hypothesis Renal colic is a severe and acute pain condition primarily caused by ureteral obstruction due to kidney stones. While conventional management focuses on pain relief and facilitating stone passage, musculoskeletal involvement may exacerbate symptoms and hinder recovery. This case report explores the potential of an integrative approach incorporating Dry Needling (DN) under ultrasound guidance to address musculoskeletal pain in renal colic, aiming to improve patient outcomes through a multidisciplinary approach.

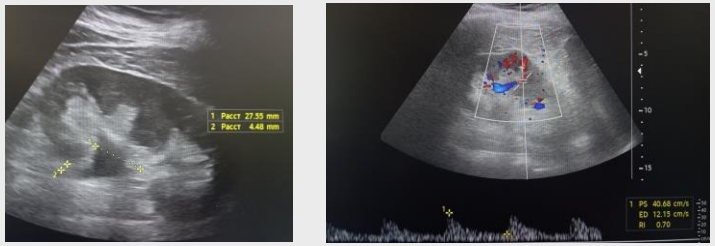

Figure 1

Methods

A 28-year-old male presented with severe left-sided flank pain, lower urinary tract symptoms (LUTS), and a history of recurrent urinary tract infections. Ultrasound examination revealed left kidney pelvis and calyces dilation, an increased resistive index in the segmental arteries (0.71 left vs. 0.61 right), and absent ureteral flow to the bladder **(Figure 1).** Clinical assessment identified musculoskeletal trigger points in the multifidus muscles, thoracolumbar fascia, quadratus lumborum, and the left sacroiliac joint. Given the identified musculoskeletal component, a multidisciplinary approach was adopted, integrating standard urological care with ultrasound-guided DN to inactivate trigger points and relieve associated pain. Approaches for Needling: The treatment approach by R. Bubnov [3] was applied, which included ultrasound identification of myofascial trigger points (MTrPs) followed by Dry Needling under ultrasound guidance using steel acupuncture needles (28-gauge) to elicit the local twitch response (LTR) effect. Needle retention duration depended on muscle twitch response duration. Pain levels were assessed using the Visual Analogue Scale (VAS) (0 to 10) before, immediately after, and 24 hours after the intervention.

Results

The patient reported immediate pain relief following the DN procedure, with no recurrence during the night. A follow-up ultrasound examination demonstrated resolution of kidney pelvis dilation, decreasing of resistive index in the segmental arteries (to 0.64), and restoration of normal ureteral urine flow The intervention not only alleviated musculoskeletal pain but also appeared to facilitate smoother urinary flow, possibly by reducing secondary muscle tension affecting ureteral function.

Interpretation of results

This case supports the hypothesis that musculoskeletal dysfunction can contribute to the pain experience in renal colic and that targeted DN therapy under ultrasound guidance may serve as a valuable adjunct to standard urological management. The mechanical interplay between muscle groups such as the multifidus, psoas, diaphragm, thoracolumbar fascia, quadratus lumborum, and smooth muscles of the ureter—along with autonomic nervous system involvement—suggests a potential mechanism for pain referral. A stone in the ureter may trigger pain via myofascial connections, particularly in the psoas muscle, while inactivating these trigger points may facilitate smooth muscle relaxation and aid in stone passage. For small calculi, this approach could serve as a definitive treatment, whereas for larger stones, it may provide supportive pain management. These findings align with previous studies on ICS regarding posture, myofascial trigger points, and ultrasound-guided DN for personalized treatment of complex cases, including pelvic pain and postural imbalance [1,2,3].

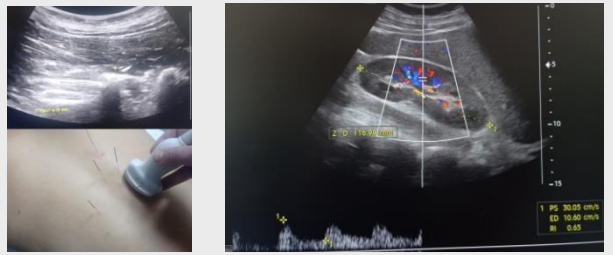

Figure 2
Left - procedure of DN-US;
Right - follow-up ultrasound examination demonstrated resolution of kidney pelvis dilation, decreasing of resistive index in the segmental arteries (to 0.64)

Concluding message

Integrating ultrasound-guided DN into renal colic management presents a promising complementary approach for cases involving musculoskeletal pain. This case highlights the potential for DN as an effective, non-invasive intervention to provide rapid pain relief and improve urinary flow dynamics. Further research is necessary to establish standardized protocols and evaluate long-term efficacy in broader patient populations. Multidisciplinary collaboration between urologists, physiotherapists, and interventional ultrasound specialists may enhance patient outcomes in renal colic treatment.

References

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