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Diagnostic value of focused shock waves for pseudoradicular low back pain

Dr. M. Gleitz, Luxembourg

Introduction:

Pseudoradicular low back pain is one of the most common symptoms of chronic lumbar problems. According to Travell & Simons, it can be caused by trigger points in the Mm. gluteus minimus and medius. In addition to the patient's pain report, manual pressure diagnostics with firm palpation are recommended, which may result in replication of the pain described by the patient. This type of examination is however very subjective. This study seeks to examine the option of pain provocation with focused shock waves, which provide the technical advantages of a deeper penetration and a precise localisation.

Material and method:

Manual and shock wave-guided trigger point diagnostics were performed in the gluteal musculature of 117 patients with chronic (>6 months) pseudoradicular low back pain (negative CT or MRI findings) and the reproducibility of the patients' reported spontaneous irradiating pain was registered. For manual examination, a pressure bar with a rounded pressure surface of 1 cm in diameter was used to apply pressure up to the pain threshold in the gluteal muscles. As a shock wave a focused Duolith (Storz) shock transmitter was used to apply shock waves with a penetration depth of 5 cm. The used energy ranged from 0.10 to 0.35 mJ/mm². The gluteus minimus and medius muscles were scanned for trigger points along longitudinal and transverse lines.

Results:

Manual pressure diagnostics triggered the patients' pain in 64% of cases. Due to the high level of pressure applied, 53% of patients developed multiple haematomas. Shock wave diagnostics resulted in reproduction of the patients' pain in 92% of cases, significantly better ($p < 0.01$) than with the manual technique. Patients reported that the triggered radiating pain was more precise and irradiated further distally. In addition, irradiation into the inguinal region, lumbar spine, gluteal and parasacral regions and along the anteromedial thigh was provoked, which patients had previously experienced only as a dull spontaneous pain. Side effects such as haematomas or skin lesions were not observed with shock wave diagnostics.

Conclusion:

Focused shock waves are highly superior to the manual method for the diagnosis of pseudoradicular radiated pain and provide reproducible results. Due to the lack of side effects and precise localisation, shock waves represent an ideal diagnostic instrument for wide-area examination of the gluteal musculature, which is responsible for the vast majority of cases of pseudoradicular pain. Shock waves should be included in diagnostics in a more systematic fashion in the future.