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REVIEW/MISE AU POINT

What is the place of electroneuromyographic studies in the diagnosis and management of pudendal neuralgia related to entrapment syndrome?

Quelle est la place de l'examen électroneuromyographique dans le diagnostic et la prise en charge des névralgies pudendales liées à un syndrome canalaire ?

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Summary Entrapment of the pudendal nerve may be at the origin of chronic perineal pain. This syndrome must be diagnosed because this can result in the indication of surgical decompression of the entrapped nerve for pain relief. Electroneuromyographic (ENMG) investigation is often performed in this context, based on needle electromyography and the study of sacral reflex and pudendal nerve motor latencies. The limits of ENMG investigation, owing to various pathophysiological and technical considerations, should be known. The employed techniques do not assess directly the pathophysiological mechanisms of pain but rather correlate to structural alterations of the pudendal nerve (demyelination or axonal loss). In addition, only direct

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or reflex motor innervation is investigated, whereas sensory nerve conduction studies should be more sensitive to detect nerve compression. Finally, ENMG cannot differentiate entrapment from other causes of pudendal nerve lesion (stretch induced by surgical procedures, obstetrical damage, chronic constipation...). Thus, perineal ENMG has a limited sensitivity and specificity in the diagnosis of pudendal nerve entrapment syndrome and does not give direct information about pain mechanisms. Pudendal neuralgia related to nerve entrapment is mainly suspected on specific clinical features and perineal ENMG examination provides additional, but no definitive clues, for the diagnosis or the localization of the site of compression. In fact, the main value of ENMG is to assess objectively pudendal motor innervation when a surgical decompression is considered. Perineal ENMG might predict the outcome of surgery but is of no value for intraoperative monitoring.

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MOTS CLÉS

Compression nerveuse ; Douleurs périnéales ; Électromyographie ; Latence distale motrice ; Nerf pudendal

Résumé Une compression chronique du nerf pudendal dans un site d'étranglement anatomique (syndrome canalaire) peut être à l'origine de douleurs périnéales invalidantes. Ce type d'atteinte doit être diagnostiqué de façon spécifique car cela peut constituer une indication de neurolyse chirurgicale. Dans ce cadre, il est usuel de demander un examen électroneuromyographique (ENMG) du périnée qui sera basé sur l'étude de l'activité électromyographique de muscles périnéaux, des réflexes sacrés et des conductions motrices du nerf pudendal. Différentes considérations physiopathologiques et techniques expliquent certaines limites de l'ENMG qu'il faut connaître. C'est ainsi que les méthodes utilisées n'évaluent pas les anomalies fonctionnelles à l'origine des douleurs mais plutôt les altérations structurelles du nerf pudendal (démýélinisation ou perte axonale). De plus, seule l'innervation motrice directe ou réflexe est évaluée, alors que l'étude spécifique des conductions sensibles serait sans doute plus sensible à objectiver une compression nerveuse. Enfin, il n'est pas possible de distinguer l'atteinte compressive des nombreuses autres causes de lésion nerveuse pudendale (chirurgicales, obstétricales, liées à une constipation chronique...). Ainsi, l'ENMG périnéal a une sensibilité et une spécificité limitées dans le diagnostic de syndrome canalaire pudendal et ne renseigne pas directement sur le phénomène douloureux. Le diagnostic de névralgie pudendale répond en fait à des critères cliniques précis et l'ENMG ne peut que donner des arguments supplémentaires mais non formels en faveur de ce diagnostic. L'ENMG périnéal permet surtout de faire un « état des lieux » de l'innervation périnéale en prévision d'un geste chirurgical de décompression et pourrait éventuellement fournir certains éléments prédictifs de l'intérêt de l'intervention. En revanche, l'ENMG ne permet généralement pas de localiser précisément le site de compression et n'a, dans tous les cas, aucune utilité dans la surveillance peropératoire.

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Introduction

Pudendal neuralgia is a chronic perineal pain syndrome that is frequently (but not always) caused by the entrapment of the pudendal nerve. In most cases, the pudendal nerve trunk is entrapped in its proximal segment within the clamp formed by the sacrospinous and sacrotuberous ligaments, less often when it crosses the falciform process or when it passes in the thick obturator internus fascia forming the pudendal canal (also known as Alcock's canal) [22] (Fig. 1). The identification of entrapment neuropathy as the source of pudendal neuralgia is crucial because this may lead to surgical decompression of the entrapped nerve and the indication of surgery must be appropriate [23]. Electroneuromyographic (ENMG) study of the perineum is usually performed when pudendal nerve entrapment is suspected. The application of electrophysiological techniques was also proposed for intraoperative monitoring of pudendal nerve surgical decompression. However, the sensitivity and specificity of ENMG studies in the diagnosis and follow-up of pudendal entrapment neuropathy must be seriously discussed in the light of various pathophysiological and technical considerations.

For almost ten years, the *Club d'électrophysiologie périnéale* (CEP) has gathered together thirty French-speaking physicians of various medical specialties who have a long experience and an important involvement in the investigation of perineal disorders by means of neurophysiological techniques. It appeared to this group of experts that, in clinical practice, some indications or interpretations of ENMG studies were not rational in the context of pudendal neuralgia. This text is the CEP consensus statement on the place and limits of ENMG studies for the diagnosis and management of pudendal neuralgia due to nerve entrapment.

Clinical symptoms suggesting pudendal nerve entrapment

Perineal pain due to pudendal nerve entrapment is suspected first on clinical grounds [11]. Pudendal nerve entrapment generates a neuropathic pain (verbal description of burning, tingling, electric shocks, numbness...) in the territory of some or all of the pudendal nerve branches (from anal to penile/scrotal or clitoridal/labial regions). The pain is exacerbated when the patient remains seated and

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