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NOTALGIA PARESTHETICA

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SUMMARY – Notalgia paresthetica is a common, although under-recognized condition characterized by localized chronic pruritus in the upper back, most often affecting middle-aged women. Apart from pruritus, patients may present with a burning or cold sensation, tingling, surface numbness, tenderness and foreign body sensation. Additionally, patients often present with hyperpigmented skin at the site of symptoms. The etiology of this condition is still poorly understood, although a number of hypotheses have been described. It is widely accepted that notalgia paresthetica is a sensory neuropathy caused by alteration and damage to posterior rami of thoracic spinal nerves T2 through T6. To date, no well-defined treatment has been found, although many treatment modalities have been reported with varying success, usually providing only temporary relief.

Key words: *Pruritus; Notalgia; Paresthesia; Hyperesthesia*

Introduction

Notalgia paresthetica (NP) is a common, yet seldom reported condition characterized by chronic pruritus in the interscapular and paravertebral region with periodic remissions and exacerbations. The disease was first described by the Russian neurologist Astwazaturow in 1934. Analogous to meralgia paresthetica or cheiralgia paresthetica, the name of the disorder is derived from the ancient Greek words *noton*, "back" and *algia*, "pain"[1-3].

The disease primarily affects adults, more frequently women than men[4], however, some hereditary cases have been reported in younger patients (even 6-year-old children) when it is associated with multiple endocrine neoplasia type 2A (MEN 2A)[5].

Etiology

The exact etiology of NP still has not been fully elucidated, however, it is widely accepted that NP is a sensory neuropathy caused by alteration and damage to the cutaneous branches of the dorsal primary rami of thoracic spinal nerves, most commonly T2 through T6. The posterior rami of spinal nerves T2 through T6 are anatomically unique in that they pass through the multifidus spinae muscle at a right-angle (90-degree) course *en route* to the epidermis, and therefore may be more susceptible to injury, which is why Massey and Pleet, as well as Pećina *et al*. suggested nerve entrapment as the underlying cause of NP (Fig. 1)[2,3]. The damage to spinal nerves may be caused by impingement from degenerative changes in the spine (for example, osteoarthritic changes, kyphosis, vertebral hyperostosis) or compression by muscle fibers[6-8]. Unfortunately, typically there is no strong correlation between spinal pathology demonstrated on imaging studies and the dermatomal localization of symptoms in patients with NP[9].

Furthermore, increased dermal innervation, various viscerocutaneous reflex mechanisms, neurotoxicity of certain chemicals and hereditary susceptibility to peripheral neuropathy have also been implicated in the pathophysiology of NP[2,6,10-13]. In patients with MEN 2A, the etiology appears to differ and an association with the codon 634 RET mutation has been reported in the literature[5,7].

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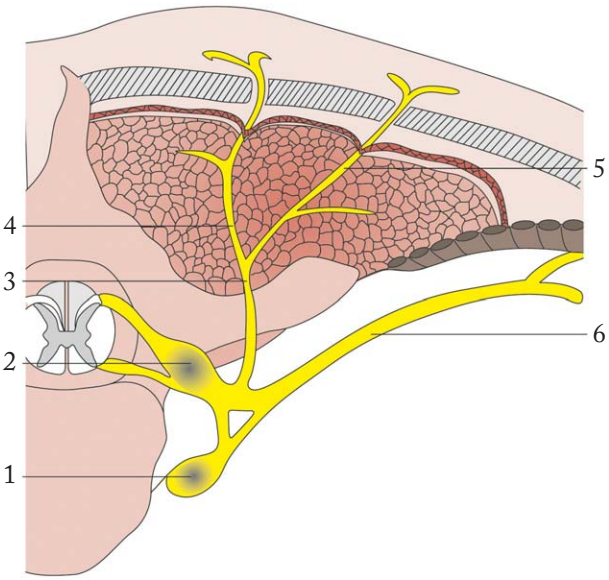

Fig. 1. Modified schematic illustration: entrapment of the dorsal nerve branches of thoracic roots at their passage through the multifidus spine muscle: 1: ganglion trunci sympathici; 2: spinal ganglion; 3: dorsal branch of the thoracic root; 4: medial branch; 5: lateral branch; 6: ventral branch of the thoracic root (adapted from: Pećina MM, Krmpotić-Nemanić J, Markiewitz AD. Tunnel Syndromes: Peripheral Nerve Compression Syndromes. 3rd edn. Boca Raton, London, New York, Washington D.C.: CRC Press; 2001)[3].

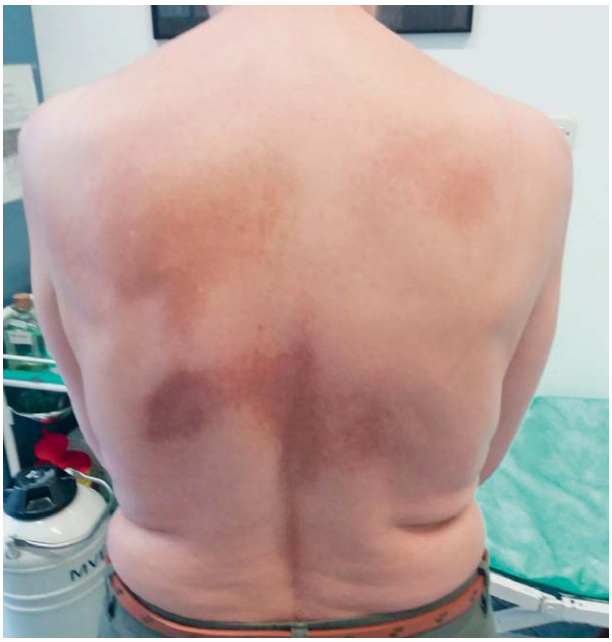

Fig. 2. Bilateral hyperpigmentation in a 59-year-old patient with notalgia paresthetica.

Clinical Presentation

Patients with NP typically present with intermittent, paroxysmal pruritus, which tends to vary in intensity, and is often accompanied by pain, hyperesthesia and various paresthesias including burning, as well as cold sensation, tingling, surface numbness, tenderness and foreign body sensation. These sensations are usually felt medially or inferior to the scapula and lateral to the thoracic spine. The disorder is typically unilateral, however, interscapular and bilateral distribution of symptoms has also been reported[6,14]. There are usually no known triggering or alleviating factors, although one review in the literature suggests that patients with MEN 2A demonstrate amelioration of symptoms following exposure to sunlight[7].

A typical dermatologic finding is hyperpigmentation of the affected area with irregular and indistinct borders with occasional keratotic or atrophic surfaces; it has been reported in two-thirds of published cases in the literature (Fig. 2)[6]. This skin manifestation is believed to be a result of chronic scratching and rubbing or, as other authors have suggested, a consequence of neurogenic release of substance P into the skin, which not only leads to pruritus, but also causes proliferation of epidermal cells, arterial smooth muscle cells and fibroblasts[15,16].

Diagnosis

The diagnosis of NP is most frequently made on the basis of reported symptoms and specific area affected. Physical examination and detailed medical history regarding vertebral and thoracic trauma, degenerative disorders or malignancies, vertebral fracture, cervical disc disease, osteoarthritis and familial history should be obtained, while in certain cases imaging methods may be considered[4,6,7,17]. Since NP can be an early manifestation of MEN 2A, in younger patients a blood test to check the level of calcitonin should be performed as a screening method for medullary thyroid carcinoma[6,7,18].

In addition, other more common pruritic diseases such as pigmented contact dermatitis, pityrosporum folliculitis, parapsoriasis, neurodermatitis and primitive cutaneous amyloidosis should be excluded prior to

Table 1. Treatment alternatives for notalgia paresthetica

Topical	
Capsaicin[19,20]	0.025% cream 5 x daily for 1 week, followed by 3 x daily for 5 weeks: 70% of patients reported improvement, however, most experienced relapse within a month after treatment; 8% patches: 3 patients experienced immediate relief of itch, duration varied considerably
Tacrolimus[21]	0.1% ointment twice daily: reduction in both intensity and frequency of itch was reported in 5 of 7 patients after 6 weeks of treatment, a tolerable burning sensation was the only side effect reported, symptoms generally returned after discontinuation of treatment
Anesthetics[22]	Lidocaine and prilocaine cream under occlusion 2 x daily: complete resolution of symptoms in 2 out of 3 patients, the effect was not maintained after stopping treatment
Intralesional	
Botulinum toxin A[23-25]	4 U *per* superficial injection, spaced 2 cm apart: 16 U in one patient, 72 U in another patient led to resolution of pruritus and decrease of hyperpigmentation for over 18 months; another study in 5 patients and later a randomized, placebo-controlled, double-blind clinical trial in 20 patients failed to replicate these results
Corticosteroids[26]	Triamcinolone 2.5 mg/mL: success in treatment of 2 patients
Oral	
Oxcarbazepine[27]	6-month treatment, initial dose of 300 mg twice daily and increased to 600 mg twice daily or 900 mg twice daily to achieve adequate relief: alleviation of symptoms in 4 out of 5 patients, 1 patient withdrew due to side effects (dizziness and headache)
Gabapentin[28,29]	Initiated at a dose of 300 mg at night and increased to 600 mg at night: resulted in absolute resolution of pruritus in 1 patient, after discontinuation of treatment, pruritus returned; 300 mg/day for 4 weeks: improvement in itching observed in all patients, side effects (mild gastric discomfort, dizziness) were well tolerated
Amitriptyline[30]	10 mg daily for 9 months: satisfactory reduction of pruritus in 1 patient, sustained for at least 1 month after stopping treatment
Other	
Surgery[31]	Surgical decompression of the cutaneous nerve: resolution of pruritus for at least 4 months in 1 patient
Nerve block[32]	Local anesthetic block in 1 patient using 5 mL of 0.75% bupivacaine combined with 40 mg of methylprednisolone acetate achieved disappearance of symptoms for over 1 year
TENS[33]	5 sessions a week for 2 weeks, 50-100 Hz, 20 min duration, 40-75 μs pulse width: mostly mild amelioration of itch was attained in a group of 15 patients
EMS[15]	30 seconds on and 30 seconds off for 15 minutes twice daily, 70 Hz with a pulse width of 300 μs: relief of pain beginning within days upon starting EMS, recurrence of pain after discontinuation of stimulation for a prolonged period of time, maintenance of analgesic effects with only intermittent stimulation in 4 cases of NP with injury to the long thoracic nerve
Narrow band UV-B[13]	Mean of 32.8 sessions and mean cumulative dose of 33.76 J/cm^2: relevant improvement, even resolution (in 2 out of 5 patients) of pruritus was achieved for at least 6 months
Osteopathic manipulative treatment[34]	20-min session, suboccipital decompression, muscle energy, inhibition and other soft tissue techniques, fascia release: improvement of symptoms in 1 patient
Acupuncture[35]	Deep intramuscular stimulation acupuncture to the paravertebral muscles in the affected area, 2-6 treatments: in 16 patients, absolute or partial alleviation of pruritus was observed, relapse occurred within 1-12 months
Exercise[36]	Stretching and strengthening exercises that elongate the spine and strengthen postural muscles: resolution of symptoms in 2 patients
Physiotherapy[6]	Spinal and paraspinal physiotherapy (ultrasound, radiation, multimodal physiotherapy): 4 of 6 patients showed improvement of symptoms that lasted for 1-9 years

TENS = transcutaneous electrical nerve stimulation; EMS = electrical muscle stimulation

diagnosing a patient with NP, which is commonly a clinical diagnosis of exclusion[6].

Treatment

Management of NP is difficult and still presents a clinical challenge, as the condition is often resistant to multiple therapies. Just as the pathogenesis of NP remains unclear, there is no well-defined treatment, although numerous treatment modalities have been reported, with variable results. Conventional antipruritic therapies such as antihistamines and topical corticosteroids do not address the neuropathic origin of NP and show poor effect[6].

Potential treatment includes topical anesthetics, capsaicin and tacrolimus, intralesional corticosteroids, cutaneous botulinum toxin type A injections, gabapentin, oxcarbazepine, amitriptyline, surgical decompression, paravertebral local anesthetic blocks, transcutaneous electrical nerve stimulation (TENS), electrical muscle stimulation (EMS), exposure to narrow band UV-B radiation, spinal manipulation, physical therapy applications, osteopathic manipulative treatment and acupuncture (Table 1). Most of these therapeutic options have been described in a small number of patients and with varying degrees of success.

Conclusion

There are fewer than 100 cases of NP described in the scientific literature to date. Although it is not a severe disorder *per se*, the lack of efficient treatment and understanding of the condition greatly affects patient quality of life. Therefore, further research regarding the underlying pathophysiology is of great importance in order to appropriately manage and treat NP patients.

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Sažetak

NOTALGIA PARESTHETICA

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Notalgia paresthetica je učestalo, iako slabo prepoznato stanje koje obilježava lokalizirani kronični pruritus gornjeg dijela leđa, a najčešće se javlja u žena srednje životne dobi. Uz svrbež u bolesnika se također može javiti osjećaj žarenja ili hladnoće, trnci, utrnulost, osjetljivost i osjećaj stranog tijela. Uz to, na mjestu simptoma često se javlja područje hiperpigmentirane kože. Iako postoji više hipoteza, etiologija ove bolesti slabo je poznata. Opće je prihvaćeno da je *notalgia paresthetica* senzorna neuropatija uzrokovana oštećenjem stražnjih ogranaka torakalnih kralježničnih živaca od T2 do T6. Unatoč mnogim različitim terapijskim metodama koje su bile promjenjivoga uspjeha i najčešće pružale privremeno olakšanje, do danas nema uspješnoga liječenja ove bolesti.

Ključne riječi: *Pruritus; Notalgia, bolesti; Parestezija; Hiperestezija*