

Pruritus Circumscriptus Sine Materia: A Sequel of Postzoster Neuralgia

Evaluation by Quantitative Psychophysical Examination and Laser-evoked Potentials

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A case of circumscribed pruritus existing since 1 year on clinically uninvolved skin is reported, in which careful history revealed a 5-year previous episode of herpes zoster in the same dermatome. Impairment of cutaneous sensitivity was evaluated by use of a quantitative psychophysical examination and laser-evoked cortical potentials (LEP). Key words: herpes zoster; circumscribed itch; hyperalgesia.

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CASE REPORT

Initial history

An otherwise healthy, 65-year-old Caucasian woman complained of chronic, recurrent severe focal itching on her left scapular area since approximately 1 year. She had no signs or symptoms of systemic disease and no history of trauma in the itching skin area. Treatment with emollients, urea-containing preparations and high-potent topical steroids had been ineffective, and at the time of admission the patient was affected by sleep loss and marked depression. The pruritus was described by the patient using an itch questionnaire as a painful, warm, burning, stinging, pricking, localizable and excruciating sensation recurring every 10 to 30 min for about 15 min duration. Itch occurred in an area of approximately 20 × 20 cm reaching from the back side of her left shoulder to the scapular region (proximal dermatomes C7–T1). Six years earlier, she had undergone mastectomy and prophylactic lymphadenectomy on the right side because of breast carcinoma. The patient had no personal or family history or sign of atopy.

Examination

Examination of the patient's back revealed no visible skin changes except for some excoriations located over the left scapula. There was no sign of hyperpigmentation, lichenification or scarring. Results of laboratory tests, including blood cell count, erythrocyte sedimentation rate, urinalysis, liver and kidney biochemistry, total and specific IgE to common aero- and food allergens, were normal except for a moderate relative eosinophil count (5.1%) and raised cholesterol (327 mg/dl). Absolute eosinophil count was within normal range. General investigations for focal diseases because of "pruritus sine materia" revealed no abnormalities. Regular follow-up examinations after mastectomy gave no evidence of metastases.

Second history

Renewed taking of history and medical records revealed that the patient had been suffering from herpes zoster efflorescences in the same area of her left back 5 years before onset of pruritus. Her shingles had been accompanied by severe attacks of pain and itch. There had been no skin lesions in the distal parts of the affected dermatomes. The symptoms had subsided after 4 weeks and a 2-week acyclovir therapy (5 × 400 mg p. o.).

Neurological examinations

There was no sign of plexus lesion in the right axilla; neurological examination revealed no signs of polyneuropathy or multiple sclerosis.

Neurological comparisons between the affected pruritic area and the contralateral side demonstrated distinct differences: cutaneous sensitivity on the left (affected side) and the right (control side) upper back area was compared by use of a quantitative psychophysical examination and laser-evoked cortical potentials (LEP), as described by Bromm et al. (1). Results yielded higher sensitivity at the affected site compared to the control site, as revealed by lower perception thresholds for vibration and pressure of calibrated von Frey hairs; however, these tests also elicited an interfering itch sensation. Subjective intensity was also greater for cold and pain, but not for warm stimuli. Tactile stimulation with a cotton wool stab, pinprick, and cold markedly enhanced perception of ongoing itch. Mean pain ratings and LEP amplitudes in response to the laser stimuli are plotted in top and bottom panels, respectively, of Fig. 1. Mean pain rating at the affected, moderately itching site was significantly higher than at the control site ($z=5.14$, $p<0.001$; Wilcoxon matched pairs signed rank test). With parallel itch provocation using a cotton wool stab in the affected skin area, pain ratings dramatically increased to an almost maximum subjective level. This increase, again, was highly significant ($z=6.44$, $p<0.001$) comparing the laser-pain ratings of affected site and affected site during tactile stimulation. These differences are mirrored by the LEP amplitudes, which were slightly higher at the affected site (107 %) and markedly enhanced during itch provocation (175 %) when compared with the control site.

Therapy

The findings suggested cutaneous hypersensitivity as sequel of postzoster neuralgia as the most probable cause of the patient's complaints. We therefore initiated treatment of the pruritic skin area with topical capsaicin ointment with a concentration of 0.05% (twice daily), increasing at monthly intervals to 0.4%. The well-known side-effects of capsaicin, burning and stinging sensations on the first days of topical application, did not occur in our patient. On a subjective visual analogue scale from 0 to 10, the patient rated her itch sensation daily. Within the first week of capsaicin treatment, the itch score decreased from maximum to 1 with single episodes of 2–3 on days with "psychological stress" in the following weeks. Treatment was further controlled by evaluating the axon reflex response to 0.1% histamine dihydrochloride in the skin prick test. In the successfully treated area over the patient's shoulder, itch and flare after histamine application were completely abolished compared with the contralateral side and compared with a transient smaller pruritic patch on her left back (which was obviously due to the difficulty of reaching this site with the capsaicin ointment). Surprisingly, wheal formation was also affected by the treatment (50% reduction of diameter). After 6 months of topical therapy, the general condition of the patient has improved markedly and the pruritus is nearly totally suppressed. Treatment is continued with 0.4% capsaicin once daily, without side-effects.

DISCUSSION

"Pruritus sine materia" as a description for pruritic skin sensations without visible skin alterations is a diagnosis made

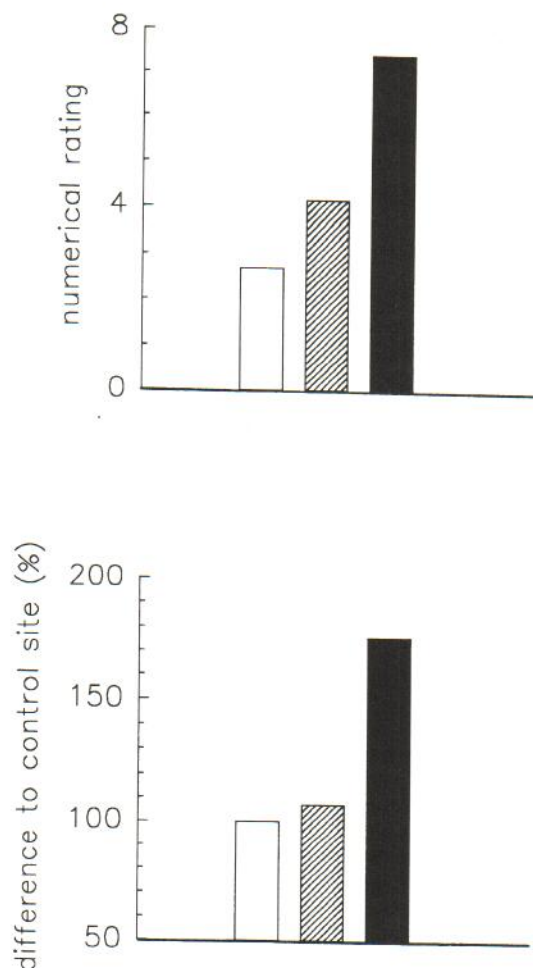


Fig. 1. Mean subjective pain ratings (top) and averaged evoked potentials (EP, bottom) in response to 60 CO₂-LASER stimuli. Affected site was compared to unaffected contralateral skin area. Pain ratings were scored using an 8-point category scale. Different bars indicate values obtained after stimulation of the control side, □; the affected side, ▨; and the affected side during continuous tactile stimulation, ■ (itch provocation).

by exclusion of well-known itching dermatoses. The patients are referred to psychosomatic exploration. Sometimes somatic causes of generalized itch like diabetes mellitus (controversial), hepatic or renal failure can be detected. Somatic nerve impairment should be considered, especially in patients presenting with a circumscribed pruritic disorder. It is remarkable that objectifiable hyperalgesic symptoms can occur even several years after total clinical remission of varicella zoster virus activation in dorsal root ganglion. In our patient, severe neuralgic symptoms were present at the time when she had suffered from a zoster eruption in the same dermatoma where the pruritus occurred 5 years later. In a previous short report on another patient with postzoster pruritus (2), the itch was described as intermingled with neuralgiform pain. However, it followed directly the zoster eruption. The long latency period in our patient does not comply with a definition of postherpetic neuralgia as pain persisting beyond 4 weeks after the onset of the bullous eruption.

Localized severe pruritus on a patch of the skin of the medial scapular border is the main symptom of notalgia paresthetica, a condition of unknown etiology characterized

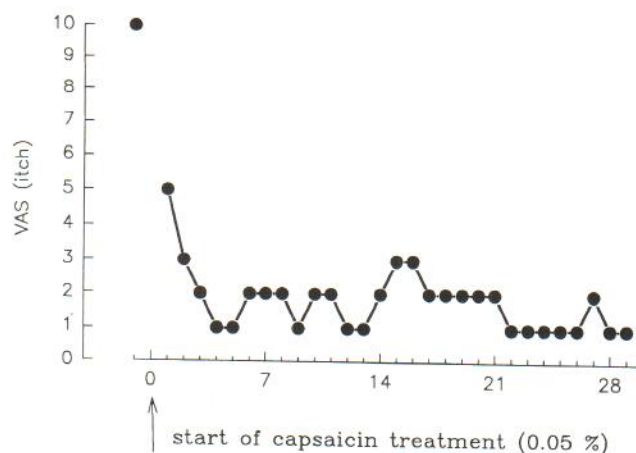


Fig. 2. Daily subjective itch ratings of the patient receiving topical capsaicin 0.05%. Data of the first month of treatment are shown. Itch rating was scored using a visual analogue scale from 0=no itch to 10=maximal itch.

by sensory neuropathy of the posterior rami of the second through sixth dorsal nerves, usually accompanied by lichenification and marked pigmentation (3). This disease can be treated with topical capsaicin (4). In our patient no hyperpigmentation occurred; however, this sign is not mandatory. On the other hand, her neuropathic changes are obviously connected to the clinically well-documented preceding zoster eruption (same dermatome). Thus, in our opinion it does not seem justified to categorize her symptoms under the diagnosis of notalgia paresthetica.

Comparative neurologic examinations revealed a patch of "itchy skin", where most routine stimuli for touch and temperature sensation led to an inadequate itch perception. In addition, it was possible to document subjective and objective hyperalgesia as indicated by the high ratings and evoked potential amplitudes in response to painful CO₂-laser stimuli in the pruritic area of our patient. These findings strongly suggest hypersensitivity of peripheral skin afferents or their spinal projection neurons innervating the affected, yet clinically normal-appearing skin of our patient.

It seems likely that postzoster neuralgiform itch has a close relationship to hyperalgesia for heat pain in this patient.

Although the different neural mechanisms of pain and itch are still controversial, they obviously share common features via activation of superficial C fiber endings (5). The thermal CO₂-laser stimulus activates mainly epidermal C- and A-delta afferents due to the absorption of human epidermis in the far infrared (1). Thus, laser-evoked potentials can be used to objectify cutaneous hyperalgesia. Capsaicin, the pungent agent of hot pepper, has for several years been known to be effective in the treatment of postzoster neuralgia (6). It releases neuropeptides (e.g. substance P, calcitonin gene-related peptide) from sensory nerve fibers of the C type. Repeated topical application prevents the reaccumulation of these neuropeptides (7). The efficacy of capsaicin treatment in our patient supports the assumption that neuropeptides are involved in pruritus evocation in this case.

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