Psoriasis and Polyneuropathy
Three Case Histories

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Neurophysiological examination of 3 psoriatic patients with symptoms of polyneuropathy revealed varying degrees of both sensory and motor nerve affection and indicated nerve fibre loss as well as demyelination. Previous reports have suggested a connection between peripheral nerves and psoriasis.
Key words: Demyelination; Nerve fibre loss.

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The etiopathogenesis of psoriasis is unknown, though in the last decade, cell-mediated immunological mechanisms as well as biochemical abnormalities have been emphasized (1). Furthermore, there appears to be a neural influence on the skin lesion in psoriasis (2, 3).

We present 3 cases of polyneuropathy in selected psoriatic patients admitted to an out-patient clinic for neurophysiological examination.

MATERIAL AND METHODS
Nerve conduction velocities were determined, using orthodromic technique and needle electrodes (4, 5). Warm and cold detection limits were obtained with the use of a Marstock stimulator (6) and compared with detection limits in age-matched healthy subjects (own unpublished data).

REPORT OF CASES
Case 1
A 58-year-old woman with psoriasis since childhood without affection of the joints. Skin lesions were restricted to the extensor side of the elbows and the knees and the patient had received treatment with topical steroids.

For 2 years the patient had suffered bilateral lightning pains and paresthesia in glove and stocking area, with nightly aggravation. There was reduction of both motor and sensory nerve conduction (Table 1), as well as low amplitude, polyphasic sensory action potentials. Temperature sensation was impaired on the feet.

Case 2
A 34-year-old woman with psoriasis since childhood and joint complaints during the last 10 years. Her plaque-type psoriasis had been treated with topical steroids and tar ointments. Psoriatic arthritis was suspected, though neither joint deformity nor tenderness had been present. At the time of investigation, psoriatic lesions were located over knee and elbow joints, on the face, the scalp, and inguinal region.

For 18 months the patient had complained of symmetric paresthesia and lightning as well as deep pain in the extremities. Neurophysiological examination revealed a minor reduction in some sensory conduction velocities, while there was a substantial reduction in motor conduction velocity in the ulnar nerve on the forearm (Table 1). Sensory action potentials were of low amplitude and polyphasic. Temperature sensation was normal on the feet, but impaired on the wrists.

NSAID treatment was discontinued, as NSAIDs can produce peripheral neuropathy (7, 8). Two months later the symptoms of neuropathy had worsened. The patient refused a neurophysiological re-examination.

Case 3
A 58-year-old woman with psoriasis, mainly of the plaque type, for the past 20 years. In 1987, psoriatic arthritis was diagnosed. Various joints were affected, causing tenderness, but no deformity. From October 1987 through May 1988 the patient was given aurothiomalate intramuscularly to a total dose of 880 mg, but without clinical effect. Since July 1988, methotrexate had been given in weekly doses of 15 mg, although at irregular intervals, due to gastric complaints. The accumulated total dose was 150 mg, but the efficacy was doubtful. In addition, NSAIDs, paracetamol and dextropropoxyphene had been given. Skin changes had been treated with topical steroids and tar ointments.

Over 2–3 years the patient had developed symptoms of peripheral neuropathy. The patient complained of lightning and deep pain and paresthesia, primarily in the hand and stocking area. At the time of the investigation the patient had not received NSAIDs or methotrexate for several months. Results from the neurophysiological examination of the patient are detailed in Table 1. Motor nerve function was almost normal, as only a slightly increased distal motor latency was present in the ulnar nerve. Sensory action potentials were polyphasic in the three nerves tested, but conduction velocity appeared only to be

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Table 1. Sensory nerve conduction velocities (SNCV), distal motor latencies (DML), and motor nerve conduction velocities (MNCV)

<table>
<thead>
<tr>
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<th>Case 1</th>
<th>Case 2</th>
<th>Case 3</th>
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<tbody>
<tr>
<td>Ulnar nerve</td>
<td></td>
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<td></td>
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<tr>
<td>SNCV, 5th finger-wrist (m/s)</td>
<td>38 (47-65)</td>
<td>56 (46-68)</td>
<td>52 (46-68)</td>
</tr>
<tr>
<td>SNCV, wrist-prox. elbow (m/s)</td>
<td>51 (55-69)</td>
<td>56 (57-76)</td>
<td>65 (56-74)</td>
</tr>
<tr>
<td>DML, wrist-hypotenar (ms)</td>
<td>3.5 (2.1-3.2)</td>
<td>3.6 (1.9-3.0)</td>
<td>3.2 (1.9-3.1)</td>
</tr>
<tr>
<td>MNCV, prox. elbow-wrist (m/s)</td>
<td>52 (53-69)</td>
<td>47 (58-71)</td>
<td>65 (57-71)</td>
</tr>
<tr>
<td>Posterior tibial nerve</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>SNCV, 1st toe-ankle (m/s)</td>
<td>30 (36-50)</td>
<td>37 (38-52)</td>
<td>41 (38-51)</td>
</tr>
<tr>
<td>DML, ankle-abd. hall. m. (ms)</td>
<td>5.0 (3.0-4.8)</td>
<td>5.0 (3.0-4.8)</td>
<td>4.8 (3.0-4.8)</td>
</tr>
<tr>
<td>Sural nerve</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>SNCV, ankle-&quot;surae&quot; (m/s)</td>
<td>48 (46-60)</td>
<td>–</td>
<td>40 (47-61)</td>
</tr>
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</table>

Numbers in parentheses are reference limits (5).

reduced in the sural nerve. Temperature sensation was unaffected.
The 3 patients denied alcohol abuse or exposure to neurotoxic chemicals and blood tests revealed serum glucose, creatinine, thyroid stimulating hormone, vitamin B12, folic acid and gamma glutamyl transferase to be within reference limits.

COMMENT

Concomitant psoriasis and polyneuropathy have not been described previously. The possibility of a random coincidence cannot be ignored. However, our 3 patients were admitted for neurophysiological examination within 3 months. It has been reported that all cutaneous neural elements in patients with psoriasis are altered (2) and that there is a prompt remission of psoriatic plaques following cutaneous nerve sectioning (3). A recent theory indicates substance P as a possible link between the nervous system and the skin lesions (9, 10). Characteristic symptoms of polyneuropathy are a sensation of pain and paresthesia, both being transmitted to the spinal cord by type C nerve fibres. Pain sensation is mediated by substance P (11). Successful treatment of moderate and severe psoriasis with topically applied capsacin has been reported (12). Capsacin is an inhibitor of cutaneous vasodilation, probably acting through depletion of substance P from nerve terminals.

The possibility of drug-induced polyneuropathy exists in case 2, as cases of polyneuropathy attributable to naproxen and indomethacin have been reported (7, 8). However, the symptoms of polyneuropathy worsened after discontinuing the NSAID, minimizing the probability of this etiology of the peripheral nerve disease. In case 3, symptoms of neuropathy started before treatment with gold, which is a well-known inducer of neuropathy.

The results of the neurophysiological examination in these 3 cases of concomitant psoriasis and polyneuropathy represent a wide range of abnormalities. Disturbed function of both motor and sensory nerves was seen. Reduced maximum sensory or motor nerve conduction velocity and reduced amplitudes of sensory action potentials indicated both demyelination and axonopathy (nerve fibre loss) of the thick myelinated nerve fibres. Involvement of thin unmyelinated type C nerve fibres is indicated by impaired temperature sensation. In case 1 and 2, all these abnormalities are represented, whereas in case 3, temperature sensation was unaffected and only minor impairment of motor function occurred. These neurophysiological findings are similar to the findings in the majority of polyneuropathies, regardless of the etiology.

The nature of a possible causal relationship between psoriasis and polyneuropathy can of course not be judged from our data, but our case histories of concomitant psoriasis and polyneuropathy support the theory of a relationship between peripheral nerves and psoriasis.

REFERENCES
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Penetration and Enrichment of Flufenamic Acid in Calf Skin from Patients with Stasis Dermatitis

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To investigate the hypothesis that the application of medicaments to skin from the lower leg of patients with stasis dermatitis might lead to their enhanced enrichment, compared with uninvolved skin from the same region, a penetration study was performed with flufenamic acid. In 5 patients with pronounced changes of chronic venous insufficiency and in 5 control patients without chronic venous insufficiency the flufenamic acid content in skin sections parallel to the surface was determined by HPLC. In chronic venous insufficiency-skin, the flufenamic acid concentration was higher in all skin levels compared to control skin. This enrichment of the substance could lead to a prolonged and more intense contact with antigen-presenting cells in this region, thus promoting the development of contact allergies observed so frequently in this pathologic condition. Key words: Skin penetration; Chronic venous insufficiency; Drug enrichment; HPLC

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Stasis dermatitis (SD) of the lower extremities, with or without leg ulcers, is a fairly common condition and frequently the sequel of deep vein thrombosis. The extent of SD can be assessed based on a clinical scale or by technical methods such as the ultrasound Doppler (1).

The prevalence rate of SD is estimated to about 15% (2). Interestingly, the majority of this large patient group suffer from multiple contact allergies to topically applied medicaments and their vehicles (3).

Previous studies have, indirectly, provided evidence that topically applied substances might enrich in the epidermis of SD-skin (4). To investigate this hypothesis, penetration studies were performed with flufenamic acid in normal and diseased skin from the lower leg. This substance was chosen because of good local tolerance and excellent analytical properties. As vehicle, a mixture of triglycerides was used, because this was known from previous studies to be suitable (5).

* Dedicated to Prof. Dr. P. H. List (Marburg) on the occasion of his 65th birthday.