CHEMOTHERAPY-INDUCED POLYNEUROPATHY IN PATIENTS TREATED WITH VINCA-ALKALOIDS

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Introduction:

Chemotherapy-induced peripheral neuropathy (CIPN) represents one of the most worrisome and common long-term adverse effects of chemotherapy treatment of cancer. In patients treated with vinca-alkaloids (V-A), the clinical manifestation is mainly sensory and may affect predominantly small sensory fibers. CIPN may significantly disturb patients daily activities, diminish a quality of life, disrupt sleep and lead to depression, particularly when being painful.

Objectives:

The aim was to assess **the incidence of CIPN** in patients treated with V-A and compare the **diagnostic validity of quantitative sensory testing (QST)** reflecting the function of both small and large sensory nerve fibers with routinely used **electromyography/nerve conduction studies (EMG/NCS)**. According to current guidelines, these methods are frequently used in neuropathic pain research.

Methods:

A group of 20 patients (12 men, 8 women, median age 39; range 23-72 years) with malignant lymphoma underwent detailed clinical neurological examination, evaluation of medical history, detailed pain status, EMG/NCS and comprehensive QST (Fig. 1-4) before and 6 months after the end of the administration of anti-cancer V-A chemotherapy. The chemotherapeutic regimens included R-CHOP (R – rituximab, C – cyclophosphamide, H – doxorubicin, O – vincristine, P – prednisolone) or BEACOPP (B – bleomycin, E – etoposide, A – doxorubicin, C – cyclophosphamide, O – vincristine, P – procarbazine, P – prednisolone) according to histological subtype of lymphoma.

Evaluated QST parameters:

tactile threshold for painless stimuli (Fig. 1 - calibrated filaments), tactile threshold for sharp pain and sensitivity for mechanical algic stimuli (Fig. 2a, 2b - calibrated pins), threshold for vibration (Fig. 3 calibrated tuner), dynamic mechanical allodynia (Fig. 4 - calibrated brush), calibrated pressure gauge (Fig. 5), thermal and thermoalgic sensitivity (Fig. 6 – thermosonda).

Results:

At the follow-up examination, twelve patients (60%) reported some sensory symptoms and/or neuropathic pain in lower (11 cases) and/or upper (7 cases) extremities. The symptoms were usually of mild to moderate intensity. In upper extremities, the symptoms mostly corresponded with clinically symptomatic carpal tunnel syndrome. The symptoms in lower legs were in the sock- or stocking-like distribution (related to CIPN). The EMG/NCS examination confirmed polyneuropathy in 10 patients (50%) (7 symptomatic, 3 asymptomatic). Eighteen patients (90 %) displayed at least one new QST abnormality in feet (and 8 in hands), most frequently in thermal sensation and thermal pain modalities.

Conclusions:

Symptoms of CIPN persist at least 6 months after the end of V-A chemotherapy in about 60% of treated patients. Clinical neurological examination is the least sensitive method used for confirmation of peripheral neuropathy in these patients, while both the EMG/NCS and QST reveal neuropathy more frequently. Some abnormalities of peripheral nerve function can be found even in asymptomatic individuals.