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Dermatomyositis – Initial Manifestation of Advanced Stage Primary Signet Ring Cell Ovarian Carcinoma

Dermatomyositis – úvodní projev pokročilého stadia primárního karcinomu ovaria z prstenčitých buněk

Dear editors,

Dermatomyositis (DM) is a rare idiopathic inflammatory myopathy characterized by cutaneous manifestations consisting of heliotrope erythema, Gottron's papules, poikiloderma, and periungual telangiectasia that are often associated with malignancies. Myopathic changes on electromyography and laboratory tests, including increased levels of serum muscle enzymes, have to confirm the diagnosis [1,2]. 15–25% of adult DM cases are paraneoplastic [3]. In this report, we describe a case of paraneoplastic DM due to primary ovarian signet ring cell carcinoma (POSRC), an extremely rare neoplasm of the ovary [4]. Previous studies reported a few primary esophageal signet ring cell carcinomas (PESRC) and there is only one case that showed an association between DM and PESRC [5]. We believe ours to be the first case report of paraneoplastic dermatomyositis as a consequence of POSRC.

A 42-year-old multipara woman with no remarkable medical history, was admitted to our outpatient clinic with a complaint of skin rash on her chest, hands, face and back for about 20 days and proximal muscle weakness and myalgia during the last 10 days were also reported together with involuntary weight loss during 2 months. The characteristic heliotrope rash, Gottron's papules and telengiectasias on the dorsum of both hands, erythema on her face, chest and back (Fig. 1) and abdominal distension were observed. Upon neurological examination, mild symmetric proximal muscle weakness was found in upper and lower limbs, deep tendon reflexes were normal, Babinski sign was bilaterally negative. The results of laboratory examination revealed elevated levels of serum creatinine phosphokinase (CK) 743 U/L (< 146 U/L), lactate dehydrogenase (LDH) 1050 U/L (< 248 U/L), aspartat aminotransferase (AST) 440 U/L (< 50 U/L), alanine aminotransferase (ALT) 141 U/L (< 50 U/L), gamma glutamyltransferase (GMT) 54 U/L (< 38 U/L). Nerve conduction studies were normal. Electromyographic tests showed myopathic changes with numerous small amplitudes and short duration polyphasic waves with early recruitment in the right deltoid and vastus lateralis muscles. The skin biopsy revealed chronic dermatitis while the muscle biopsy result was consistent with DM and atrophic muscle fibers at the periphery of the fascicule (Fig. 2A–2D). According to Bohan and Peter's classification [6], definite DM was considered. Abdominal ultrasound (USG) showed perihepatic, perisplenic and pelvic collections, endometrial thickening and enlarged right ovary. Abdominal thoracic computed tomography (CT) showed peritonitis carcinomatosa, solid mass on bilateral ovarian complex, multiple lymph nodes, diffuse ascites and pleural effusion in the right hemithorax. There was a remarkable increase in CA 125 and CA 15-3 levels. For staging, cytological samples from ascites and pleural effusion showed signet-ring cell carcinoma. Pelvic magnetic resonance imaging (MRI) confirmed bilateral ovarian solid tumors, peritonitis carcinomatosa, thickened endometrial mucous membrane and multiple lymph nodes. On positron emission tomography (PET), multiple metastases on the lung, liver, peritone, lymph nodes and corpus of the thoracal vertebra were observed and POSRC was considered. The patient was transferred to an oncology clinic due to inoperable solid masses on bilateral ovarian complexes. The survival prognosis was poor for this patient and the patient died 3 months after the discharge.

Paraneoplastic DM can be diagnosed prior to or concomitantly with a cancer, or it can occur after a cancer diagnosis. The candidate cancers associated with DM include ovary, lung, breast, colon and rectum, stomach

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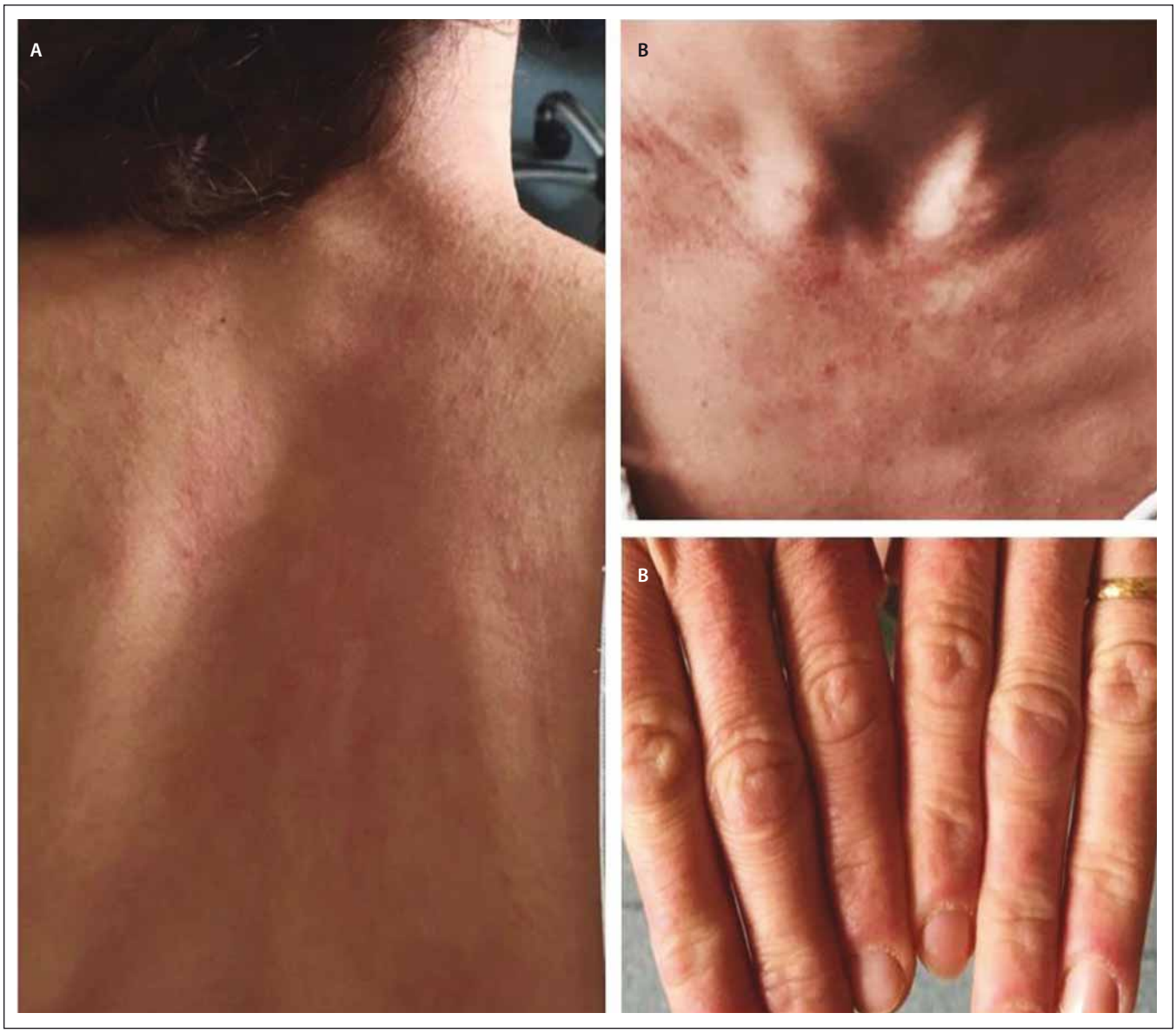

Fig. 1. A) Erythema across the upper back (Shawl sign); B) Erythema of the upper chest (V-sign); C) Bilateral symmetric Gottron's papules and periungual telangiectasies on interphalangeal joints.

and pancreas. In women, breast and ovary are the most common cancers, while lung and colon are the most frequent in men [3].

Signet ring cell carcinoma is an adenocarcinoma and can occur in any organ, prevalently in stomach, followed by colorectum and lung. Cytokeratin, one of the intermediate filaments present in epithelial cells, almost always indicates that the tumor is carcinoma. Different cytokeratin patterns in various carcinomas have been obtained such as CK7+/CK20– and CK7+/CK19– patterns that were prevalent in primary gastric signet ring cell carcinoma, CK7–/CK20+, CK7–/CK19+, CK7–/CK20– patterns in primary colorectal signet ring cell carcinoma [7]. CK7 is usually expressed in an ovarian cancer [8]. We were unable to search for the cytokeratin pattern in our case due to the lack of immunohistochemical study in our laboratory.

POSRC are extremely rare and signet ring cell carcinomas of the ovary are mostly observed as metastases of primary gastrointestinal tract tumours entitled Krukenberg tumour [4]. Since there were no signs of gastrointestinal tract involvement on PET CT in our patient, primary tumour was thought to be ovarian and there were multiple metastases associated with that cancer.

Over the past 45 years, many criteria have been published with different limitations to distinguish PM and DM [9]. The most extensively used Bohan and Peter's criteria include: 1) symmetrical proximal muscle weakness; 2) elevation of serum levels of muscle-specific enzymes (CK, aldolase, transaminases); 3) electromyography compatible with inflammatory myopathy 4) muscle biopsy evidence for myositis; 5) characteristic rashes of dermatomyositis. Definite DM is defined as rash plus three other parametres [6]. European Neuromuscular Center and Muscle Study Group members proposed a new detailed list of exlusion and inclusion criteria to be

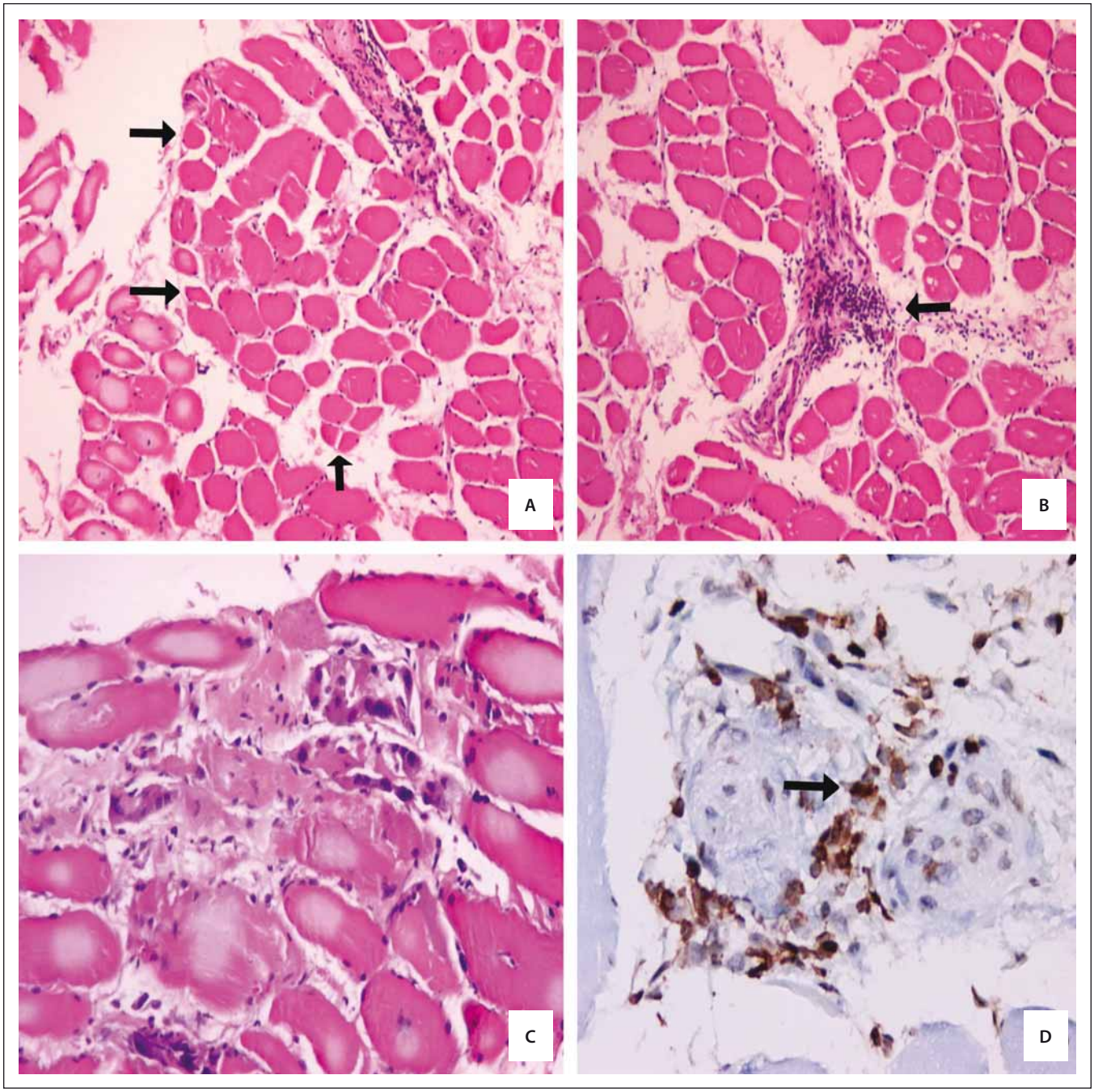

Fig. 2. A) Atrophic muscle fibers at the periphery of the fascicule (arrows). H&E X 100; B) Lymphocyte infiltrations are mainly perivascular rather than endomysial in a biopsy specimen (arrows). H&E X 100; C) Scattered degenerated muscle fibres were observed (asterixes). H&E X 200; D) Infiltrated lymphocytes showed immunoreaction to CD45 antibody (arrows). CD45 X 400.

applied to clinical, laboratory (including MRI and myositis-specific antibodies) and pathological features for idiopathic inflammatory myopathies in 2004 [10]. Finally, a group of experts gathered to define a new classification criteria that are currently under review [9].

The patient in this case report presented characteristic heliotrope rash, Gottron's papules and telengiectasias, symmetrical proximal muscle weakness, increased muscle enzymes, electromyography findings compatible with inflammatory myositis and atrophic muscle fibers at the periphery of the fascicule evidenced by muscle biopsy. Along with all the classification effort, our patient fulfilled the criteria for definite DM and thus we did not need to perform MRI of the muscles. After our diagnosis, ovarian cancer has been detected during hospitalization and graded as advanced stage. No surgical treatment was recommended, chemotherapy was applied. The patient died three months after discharge.

In conclusion, the present case is considered to be the first case of paraneoplastic

DM as a consequence of advanced stage POSRC. If there is no malignancy at the time of diagnosis, anual evaluation during the first 3 years is reccommended because of the higher risk during this period [2].

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