

CASE REPORTS

Dermatomyositis and Punctate Porokeratotic Keratoderma as Paraneoplastic Syndrome of Ovarian Cancer

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Abstract. Dermatomyositis (DM) is a dermatomyopathy with a broad spectrum of features, defined by Bohan et al as an objective set of clinical and laboratory criteria. Dermatomyositis has been associated with extra-cutaneous neoplasias, especially with ovarian carcinoma.

The term “punctate keratoderma” comprises a group of diseases with different etiologies characterized by small hyperkeratotic lesions usually scattered in palms and soles. Punctate porokeratotic keratoderma (PPK) is a type of punctate keratoderma mainly defined by its peculiar histological features, including the presence of cornoid lamella similar to the one observed in porokeratosis. Punctate porokeratotic keratoderma has been considered a sporadic disease although some rare paraneoplastic cases have been published.

We report for the first time a case of dermatomyositis with typical features of punctate porokeratotic keratoderma, both as paraneoplastic presentation of ovarian carcinoma. Its paraneoplastic nature is clearly demonstrated by the clinical improvement observed following tumor excision.

Key words: dermatomyositis, ovarian carcinoma, paraneoplastic syndrome, punctate keratoderma.

DERMATOMIOSITIS Y QUERATODERMIA POROQUERATÓSICA PUNCTATA COMO SÍNDROME PARANEOPLÁSICO DE UN CARCINOMA OVÁRICO

Resumen. La dermatomiositis (DM) es una dermatomiotopía con un amplio espectro de manifestaciones, definido por Bohan et al como un conjunto objetivo de criterios clínico-analíticos. La DM se ha relacionado con neoplasias extracutáneas, especialmente con carcinoma ovárico.

El término queratoderma punctata incluye un grupo de enfermedades con diferentes etiologías, caracterizadas por lesiones hiperqueratósicas de pequeño tamaño, habitualmente salpicadas en palmas y plantas. La queratoderma poroqueratósica punctata (QPP) es un tipo de queratoderma punctata definida principalmente por sus peculiares características histopatológicas, incluyendo la presencia de lamela cornioide, similar a la observada en la poroqueratosis. La QPP ha sido considerada una enfermedad esporádica; sin embargo se ha publicado algún caso raro paraneoplásico.

Presentamos por vez primera un caso de DM con datos típicos de QPP, ambas como manifestaciones paraneoplásicas de un carcinoma ovárico. Su naturaleza paraneoplásica es claramente demostrada por la mejoría clínica observada tras la extirpación de la neoplasia.

Palabras clave: dermatomiositis, carcinoma ovárico, síndrome paraneoplásico, queratoderma punctata.

Introduction

Dermatomyositis is an idiopathic inflammatory disease involving the muscles and skin with a spectrum of presentations

that ranges from strictly muscular involvement (polymyositis) to strictly cutaneous involvement (amyopathic dermatomyositis). The disease is defined by a number of objective clinical and analytical criteria (the most widely used are those of Bohan et al¹) that make this diagnosis increasingly reliable.

Dermatomyositis is a disease of the connective tissue that is closely associated with underlying neoplastic processes, as shown in classical studies.^{2,3} This association is particularly notable in the case of ovarian carcinoma.⁴

Punctate keratoderma (also known as papular keratoderma or keratoderma disseminatum) encompasses a group of diseases of different etiologies that present as small, unevenly distributed

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keratoses predominately on the palms and soles. Punctate porokeratotic keratoderma (PPK) is one of these disease entities and is defined by its histology (it presents a structure similar to that of the cornoid lamella in porokeratosis).⁵ It is usually sporadic, although paraneoplastic cases have been reported.^{6,7}

Case Report

Our patient was a 72-year-old woman with an eruption that had developed over a period of 2 weeks. The physical examination revealed intensely pruritic, edematous, purple, erythematous plaques with a central pigmented atrophic area at the top of the legs and on the left shoulder (Figure 1). Hyperkeratotic papules of between 2 and 5 mm were also observed in depressions in the epidermis on both palms and on the volar surface of several fingers (Figure 2). The lesions had appeared over a number of months but there was no family history of keratoderma or history of exposure to arsenic.

The patient also reported losing 7 kg in weight and suffering from progressive muscle weakness that meant she had been unable to stand without assistance during the previous 3 to 4 months.

Basic tests were performed, including biochemistry, blood count, coagulation studies, urinalysis, and an immunological study (antinuclear antibodies, extractable nuclear antigen, anti-DNA antibodies, and anti-complement). No abnormalities were revealed. Analysis of muscle enzymes showed high levels of the following: creatine phosphokinase, up to 2999 U/L (reference range, 20-130); glutamic oxalacetic transaminase, 95 U/L (reference range, 5-45); lactate dehydrogenase, 435 U/L (reference range, 90-230); and aldolase, 46.8 U/L (reference range, 0.60-7.60). A battery of tumor markers showed high levels of CA125 (670 U/mL; upper limit, 35 U/mL) but the other markers, including β hCG, CA15.3, and CA19.9, were normal.

Although the electromyogram showed a discrete myopathic pattern, muscle biopsy revealed no histologic abnormalities.

A biopsy was taken from the active edge of one of the plaques on the hip and an inflammatory lymphocytic infiltrate was observed at the dermoepidermal junction, with vacuolization of the basal cell layer and necrotic keratinocytes at different levels of the epidermis. A periadnexal perivascular infiltrate was also observed, with reduced adnexal structures (Figure 3). These biopsy results were compatible with a diagnosis of dermatomyositis.

A further biopsy was performed of the palmar hyperkeratotic lesions and revealed a compact column of parakeratotic hyperkeratosis with a reduced granular layer and a dense underlying perivascular inflammatory infiltrate (Figure 4). The results of this biopsy indicated PPK.

Computed tomography of the thorax, abdomen, and pelvis was requested and revealed an ovarian mass of



Figure 1. Violaceous erythematous plaque with a poikilodermal center, located on the right hip.



Figure 2. Keratotic papules between 2 and 3 cm in diameter, located on the volar surface of several fingers.

approximately 10 cm in diameter in the left adnexal region and multiple enlarged lymph nodes in the retroperitoneal area. A hysterectomy with bilateral adnexectomy was performed, with subsequent histopathological diagnosis of ovarian serous cystadenocarcinoma (International Federation of Gynecology and Obstetrics [FIGO] stage III).

The alterations in the muscle enzyme levels and the lesions at the top of the thighs disappeared 1 month after surgical removal of the tumor and the palmar hyperkeratotic papules improved markedly.

Discussion

We present a case that meets sufficient criteria for a diagnosis of dermatomyositis to be considered highly probable (Bohan et al)¹: a pruritic purple erythematous eruption, with associated poikiloderma, that affects the extensor surfaces of the limbs (hips and shoulder); the eruption was also associated with proximal symmetrical muscle weakness, elevated levels of muscle enzymes, and electromyographic abnormalities. The absence of histologic abnormalities in muscle biopsy material has been observed in 25% of cases of dermatomyositis.⁸

The association of dermatomyositis with malignant tumors is a well-known phenomenon and is usually seen in patients aged over 50 years. In fact, patients with dermatomyositis have a greater relative risk of suffering from occult cancer (the relative risk is 2.4 in men and 3.4 in women).² Although ovarian carcinoma is considered to be the cancer most often associated with dermatomyositis,

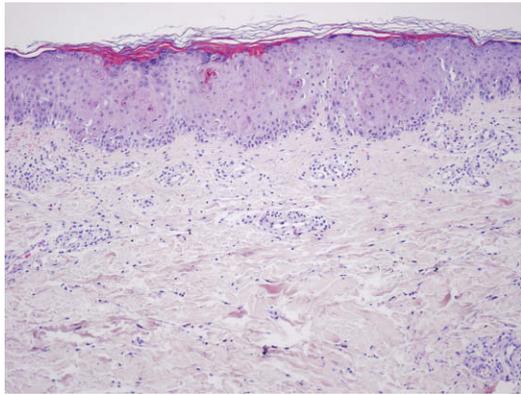


Figure 3. Biopsy of the active edge of a plaque on the hip. Interface dermatitis with patchy vacuolization of the basal cell layer and necrotic keratinocytes, along with perivascular and periadnexal infiltration in the dermis (hematoxylin–eosin, ×40).

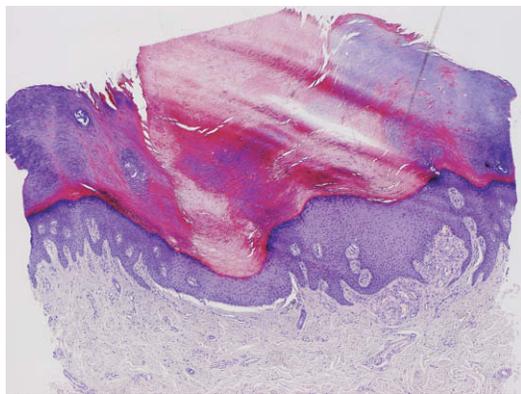


Figure 4. Biopsy of a palmar keratotic papule. Compact column of parakeratotic hyperkeratosis demarcated by adjacent orthokeratosis, reduced granular layer and perivascular inflammatory infiltrate (hematoxylin–eosin, ×40).

many other types of associated tumor have also been described. Several studies also show that women with dermatomyositis present a 17-fold greater risk of ovarian carcinoma than control subjects (of the same age but without dermatomyositis).⁸

PPK is a rare disease described by Herman in 1973 and Friedman in 1988⁵ and is included under the umbrella of punctate keratoderma—a group of diseases characterized by irregularly distributed keratotic papules, predominately on the palms and soles. To date, fewer than 14 cases of PPK have been reported⁷ and most of these were sporadic. There are, however, cases of autosomal dominant inheritance.

The association between PPK and malignant tumors is extremely rare and has, to date, only been described in bronchial carcinoma.^{6,7} To our knowledge, there have been no reported cases of an association between PPK and ovarian carcinoma. Cases where PPK is associated with cancer tend to occur at an advanced age (after the fifth decade of life) and progress rapidly over a period of months, as in the case of our patient.

Differential diagnosis for PPK should include Brauer-Buschke-Fischer syndrome (hereditary with an onset in adolescence and histological findings characterized by orthokeratotic hyperkeratosis), arsenical keratoses (with histological findings similar to those of actinic keratosis), punctate porokeratosis (histology shows cornoid lamella but with a typically inclined appearance and dyskeratotic keratinocytes, unlike PPK),⁵ and palmar filiform hyperkeratosis (clinically characterized by the spiny appearance of the lesions).⁹ All these diseases can be differentiated from PPK by means of clinical and histological criteria.

A differential diagnosis may also be considered using the manifestations of dermatomyositis occasionally observed on the hands, such as so-called mechanic’s hands, although the clinical appearance of the latter is different (appearance of chronic psoriasiform eczema) and histology would show an interface dermatitis (not observed in the biopsied keratotic papules), corresponding to a manifestation of dermatomyositis.

In summary, we report for the first time the case of a 72-year-old woman who developed PPK and dermatomyositis as simultaneous paraneoplastic manifestations of ovarian carcinoma, as indicated by the resolution (dermatomyositis) or marked improvement (PPK) of these manifestations following removal of the underlying tumor.

Conflicts of Interest

The authors declare no conflicts of interest.

References

- Bohan A, Peter JB, Bowman RL, Pearson CM. Computer-assisted analysis of 153 patients with polymyositis and dermatomyositis. *Medicine (Baltimore)*. 1977;56(4):255-86.
- Sigurgeirsson B, Lindelof B, Edhag O, Allander E. Risk of cancer in patients with dermatomyositis or polymyositis. A population based study. *N Engl J Med*. 1992;326(6):363-7.
- Airio A, Pukkala E, Isomaki H. Elevated cancer incidence in patients with dermatomyositis: a population based study. *J Rheumatol*. 1995;22(7):1300-3.
- Davis MD, Ahmed I. Ovarian malignancy in patients with dermatomyositis and polymyositis retrospective analysis of fourteen cases. *J Am Acad Dermatol*. 1997;37(5 Pt 1):730-3.
- Friedman SJ, Herman PS, Pittelkow MR, Daniel Su WP. Punctate porokeratotic keratoderma. *Arch Dermatol*. 1988; 124:1678-82.
- Herman PS. Punctate keratoderma. *Arch Dermatol*. 1971; 104:682-3.
- Bianchi L, Orlandi A, Iraci S. Punctate porokeratotic keratoderma—its occurrence with internal neoplasia. *Clin Exp Dermatol*. 1994;19:139-41.
- Sontheimer RD, Costner MI. Dermatomyositis. In: *Fitzpatrick's Dermatology in General Medicine*. 6th ed. USA: McGraw-Hill; 2003. p. 1695.
- Kaddu S, Soyer P, Kerl H. Palmar filiform hyperkeratosis: a new paraneoplastic syndrome? *J Am Acad Dermatol*. 1996; 134:720-6.