Extensive segmental acanthosis nigricans form of epidermal nevus
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Abstract

Eight cases of the acanthosis nigricans form of epidermal nevus have been described in literature. The present case is impressive and has an extensive segmental distribution. Although etiological factors, such as mutations in the FGFR3 gene, are becoming recognized, treatment options remain limited. We present a case of a 14-year-old male with multiple hyperpigmented, hyperkeratotic plaques on the upper body, axillae, and groin with a segmental distribution following Blaschko lines. Histopathological investigation showed aspects of both acanthosis nigricans and epidermal nevus. So far, screening has not revealed any internal abnormalities. As previous cases show a clear association with internal diseases, repetitive screening for internal diseases and syndromes is suggested in the case of the acanthosis nigricans form of epidermal nevus. Treatment of the condition remains a challenge.

Introduction

Eight cases of the acanthosis nigricans (AN) form of epidermal nevus (EN) have been described in the literature. These patients share clinical and histopathological features of both AN and EN. Associations with other diseases have been reported in the literature. Furthermore, the treatment of these conditions is a real challenge. Hence we describe this patient to discuss both potential underlying pathology and treatment options.

Case report

Figure 1. Clinical picture showing multiple, hyperpigmented, velvety, hyperkeratotic plaques on the right abdomen with a segmental distribution along Blaschko lines not crossing the midline.

Figure 2. Close up of the lesions on the right abdomen, shown in Figure 1.

Figure 3. Clinical picture showing multiple, hyperpigmented, velvety, hyperkeratotic plaques in the right axilla.

Figure 4. Close up of a lesion in the axilla, shown in Figure 3.
A 14-year-old male presented with multiple, hyperpigmented, hyperkeratotic plaques on the right abdomen, groin, axilla and back with a segmental distribution following Blaschko lines (Figures 1 through 4). The lesions were first observed on his abdomen at the age of 2½ years, but progressive involvement developed in the axilla and groin. The plaques expanded gradually in size and number, in a linear pattern. The lesions became darker over time. No other skin, hair, or nail abnormalities were observed. The patient had no history of endocrinopathies, such as thyroid disease, diabetes mellitus, Cushing disease, acromegaly, or Addison disease. Syndromal features were lacking. Family history was negative for epidermal nevus, acanthosis nigricans or any other skin disease; there were no malignancies or genetic syndromes in his family. The family history was negative for endocrinopathies except for two grandparents who had diabetes mellitus type II.

Discussion

Acanthosis nigricans (AN) is a skin disorder characterized by hyperpigmented velvety plaques symmetrically distributed on the sides of the neck, axillae and groins. Skin hyperplasia may result from the stimulation of insulin-like growth receptors. It is associated with obesity, endocrinopathies (insulin resistant diabetes mellitus, Cushing disease and acromegaly), and visceral malignancies. Acanthosis nigricans maligna is a rare form of AN that is associated with adenocarcinomas [1].

Epidermal nevi (EN) are congenital skin lesions that are characterized by hyperpigmented plaques symmetrically distributed on the sides of the neck, axillae and groins. Skin hyperplasia may result from the stimulation of insulin-like growth receptors. It is associated with obesity, endocrinopathies (insulin resistant diabetes mellitus, Cushing disease and acromegaly), and visceral malignancies. Acanthosis nigricans maligna is a rare form of AN that is associated with adenocarcinomas [1].

Epidermolysis hyperkeratosis may be observed in epidermal nevi with a keratin 1 or 10 mutation. Patients with these nevi have a mosaic form of bullous congenital ichthyosiform erythroderma (BCIE), which may arise in a generalized form in patients’ offspring [2]. No epidermolysis hyperkeratosis was observed in our patient.

In 2006, Ersoy-Evans et al. described four individuals with an AN form of EN, with a segmental distribution and clinical and histopathological features of both EN and AN, as in the present case [3]. Four additional cases were found in the literature. In four of these eight individuals, mucoepidermoid carcinoma, EN syndrome, Hashimoto thyroiditis, and amenorrhea with obesity were observed. Four other cases had no associated diseases [3]. Because of this association with underlying conditions, our patient was screened by a pediatrician for endocrinopathies, syndromes, and malignancies. Physical examination and extensive laboratory evaluation of blood glucose, insulin, and lipids did not reveal any abnormalities in our patient. Because of the extensive manifestation of this AN form of EN our patient and his parents received instructions to consult a physician should any signs of underlying disease develop and he will continue to be monitored.

It has become clear that germline mutations of the fibroblast-growth-factor receptor (FGFR) are associated with skeletal dysplasia syndromes and dwarfism. In some of these syndromes acanthosis nigricans is manifest. The FGFR family comprises 4 major transmembrane receptor tyrosine kinases and is involved in embryogenesis, angiogenesis, and tissue homeostasis. Theorizing that the histopathological resemblance of AN with EN may deflect a similar genetic causality, Hafner et al. identified 4 major transmembrane receptor tyrosine kinases and is involved in embryogenesis, angiogenesis, and tissue homeostasis. Theorizing that the histopathological resemblance of AN with EN may deflect a similar genetic causality, Hafner et al. identified 4 major transmembrane receptor tyrosine kinases and is involved in embryogenesis, angiogenesis, and tissue homeostasis.

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Epidermal nevus syndromes are characterized by epidermal nevi accompanied by skeletal and nervous system abnormalities and some associated malignancies; these may be caused by a more widespread mosaicism of FGFR3 mutations.
In conclusion, the AN form of EN may be associated with underlying pathology. Hence, internal screening and follow up is warranted. Treatment of these lesions remains an ultimate challenge.

References


