"String of pearls pattern": report of three cases of non clear-cell acanthoma*

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Abstract: The coiled and dotted vessels in a serpiginous arrangement or "string of pearls" is considered a classical vascular pattern associated with clear cell acanthoma. We present three cases of epidermal tumors different from clear cell acanthoma that have the same "string of pearls" vascular pattern. Even though most authors keep considering the "string of pearls" vascular pattern an almost pathognomonic sign of clear-cell acanthoma, the cases presented here suggest that some other epidermal tumors can also show this pattern.
Kewbords: Acanthoma; Dermoscopy; Keratosis, seborrheic

INTRODUCTION

Assessment of non-pigmented nodular lesions is one of the biggest challenges in dermoscopy.[1] In these cases, when there is no pigment, assessment of vascular structures is very useful, either to clarify its nature or some other features, like invasion to deeper levels. There are some vascular patterns that are considered "classical", because they are frequently associated to specific tumoral lesions. Clear-cell acanthoma (CCA) is a rare benign epidermal tumor, usually showing a very characteristic vascular pattern of dotted and coiled vessels, in a mesh-like or serpiginous arrangement, being metaphorically named "string of pearls".[2] Even though, there are some reports describing a dotted vessels arrangement very similar to that seen in psoriatic plaques.[3,4]

In some recent papers, other case series describe this pattern overlapping other types of lesions; however, most authors keep considering dotted and coiled vessels in a serpiginous arrangement or "string of pearls" a very distinctive pattern of CCA.[5-7]

In this report, a series of 3 cases of non-CCA lesions, which show the dermoscopic "string of pearls" pattern, are described.

CASE REPORT

Case 1. A 65-year-old female Mexican patient admitted to a dermatology clinic due to the presence of an asymptomatic lesion on the right forearm. Physical examination showed a 5-mm reddish nodule with scaly surface, of unknown evolution. Dermoscopy revealed a dotted vascular pattern regularly arranged in serpiginous lines giving the appearance of a "string of pearls". Histopathologic

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analysis confirmed a lichen-planus-like keratosis (LPLK) (Figure 1).

Case 2. During a total body examination of a 62-year-old male Mexican patient, who attended regularly to the dermatology clinic for the treatment and follow-up of his disseminated vitiligo, a reddish 5-mm nodule located on the lower back, adjacent to a vitiligo lesion was noted. Dermoscopy showed a non-pigmented lesion with multiple dotted and some coiled vessels in a serpiginous arrangement ("string of pearls"). Histopathology demonstrated an acanthotic type of seborrheic keratosis (Figure 2).

Case 3. A 60-year-old male Turkish patient was assessed due to the presence of a 10-mm reddish plaque on his left mandibular region; the lesion appeared 2 years earlier and was mildly pruritic. Dermoscopic examination revealed an ulcer on the upper part and a vascular pattern characterized of coiled vessels in serpiginous arrangement. Biopsy confirmed a diagnosis of seborrheic keratosis (Figure 3).

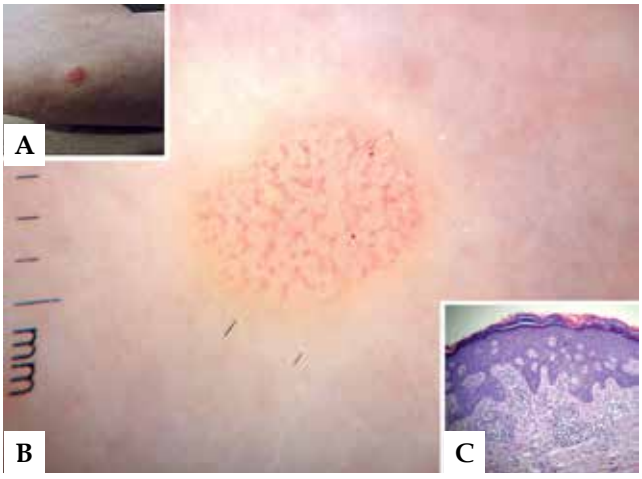

Figure 1: A - Clinical image of a reddish nodule in the forearm. **B -** polarized dermoscopy showing dotted, and some coiled vessels arranged in serpiginous lines. **C -** histologic image, X10 Hematoxylin & eosin with hyperkeratosis, areas of hypergranulosis and irregular acanthosis with foci of basal cell liquefactive degeneration and lichenoid lymphocytic infiltrate

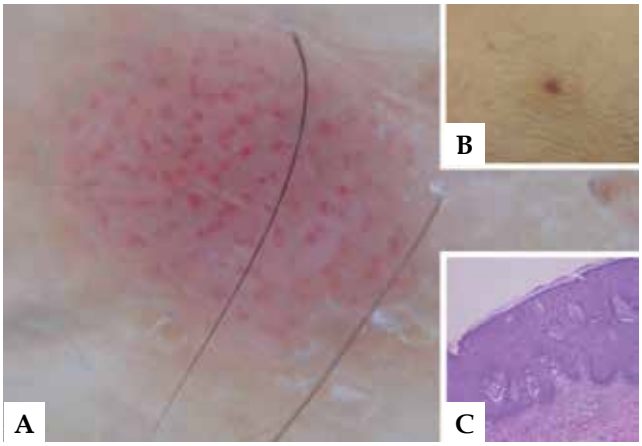

Figure 2: A Polarized dermoscopy shows coiled an dotted vessels arranged in linear and serpiginous rows **(B)** clinical reddish papule on the lower back **(C)** histologic image 10x Hematoxylin & eosin of basaloid cells regular acanthosis, with fusion of the rete ridges.

DISCUSSION

Since 1990, when "arborizing" vessels were described as features of basal cell carcinoma, a lot of different morphologies and patterns have been described in multiple melanocytic and non-melanocytic lesions. [2-6]

In this report, we can demonstrate that exceptions in dermoscopy (as in the rest of medical specialties) exist. First of all, is the fact that dotted vessels were initially considered as exclusive of melanocytic lesions; Zalaudek *et al.* consider that CCA is an exception (the first of two), because CCA can show dotted vessels in a serpiginous, linear and even reticular arrangement; this vascular pattern is superimposed of signs of keratinization (white halo around vessels), or at least a whitish background. [7] Thick variants of CCA can show, instead of dotted vessels, a similar arrangement of glomerular (coiled) vessels. Albeit "string of pearls" vascular pattern has been considered highly specific of CCA, our 3 cases demonstrate that this vascular arrangement is not specific of this condition (second exception). [7]

Seborrheic keratosis (SK) and LPLK are benign skin tumors, which share some clinical, histological and pathophysiological features, and are considered to be part of the same spectrum. [8] Typical morphology of vascular structures in SK are "hairpin" – looped – vessels, usually with a whitish halo; in inflamed forms of seborrheic keratosis, looped vessels are usually deformed, being shaped as elongated, tortuous, corkscrew, and irregular. [9]

All of our cases presented with dotted and coiled vessels in a serpiginous arrangement ("string of pearls" pattern) correlate with

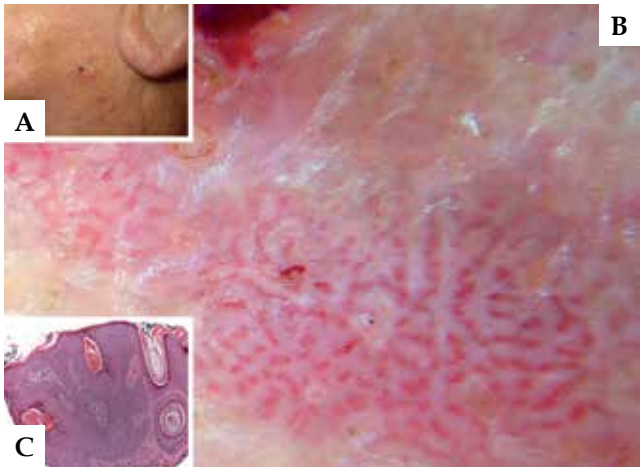

Figure 3: A - Clinical image of an itching reddish plaque in left mandibular region **B -** polarized dermoscopy showing a small ulceration on the right up corner, and mostly coiled vessels arranged in a serpiginous lines **C -** histologic image X10 Hematoxylin & eosin showing keratotic plugs and intraepidermal cyst on an irregular basaloid cell proliferation

histological findings as groups of capillary vessels located superficially in the papillary dermis that seems to be arrange in a longitudinal pattern isolated from one another by acanthosis of the rete ridges.

In case 1, lesion diagnosed as LPLK, we cannot be sure whether a classical SK was the original lesion, but we can assume that the lesion was in a regressing stage. As previously described by Zeballos *et al*., LPLK represents an immunological or regressive response to a pre-existent epidermal lesion, usually solar lentigos or SK.[10] The vascular arrangement described in this report can suggest that some other epidermal tumors can show this pattern and that it is not exclusive for the diagnosis of CCA.❑

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