Acta Dermatovener (Stockholm) 53: 511–514, 1973

SOME EVIDENCE CONCERNING THE SWEAT DUCT ORIGIN OF CLEAR CELL ACANTHOMA

Åke G. H. Lindgren and Emil Neumann

From the Departments of Pathology and Dermatology, St. Göran's Hospital, Stockholm, Sweden

Abstract. Two cases of clear cell acanthoma have been examined. In both cases pale sheath cells of the eccrine sweat duct have been shown to merge in the pale cell acanthoma. In some places the pale cells replaced the basal layer. These facts suggest an eccrine sweat duct origin for the clear-cell acanthoma.

A complete review of the 104 cases of a well defined entity named clear cell acanthoma (CCA), published between 1962 and 1970 was made by Degos & Civatte (2). CCA has been defined on the basis of its typical histological changes. The clinical picture does not seem to be pathognomonic, although some suggestions regarding clinical recognition have been made (5). A small pink nodule slightly elevated on normal skin, often covered with a thin crust, may suggest the diagnosis. However, variation in colour, consistency and size have also been recorded. No spontaneous healing has been noted. A reliable diagnosis can only be made on the basis of the distinctive histological appearance, which reveals an epidermal hyperplasia, consisting of strikingly pale, somewhat enlarged cells with slightly dilated intercellular spaces, in some places giving the impression of spongiosis. The border between this area and the normal epidermis is sharply delineated. A constant finding is the abundance of glycogen in the pale cytoplasm and a cessation of melanogenesis. Vascular dilatation, capillary neoplasia and an inflammatory infiltration in the corresponding upper part of the corium are additional features in the histological picture.

Considering the permanency of the lesion and the constant glycogen content in the proliferative pale cells, as confirmed by electron microscopy, (7, 8) a possible sweat gland origin has been discussed (11, 12). However, signs of formation of sweat duct elements within the lesion have not been found hitherto. The intra-epidermal part of the sweat duct has been observed to pass through the lesion without becoming involved in the acanthotic process (12) and in some cases hyperplasia or dilatation of the dermal part of the sweat duct and sweat glands was found (4, 9, 10, 12, 13).

The nosologic position of CCA has not yet been settled. In the original report a benign Malpighian new growth has been suggested (1). CCA has been regarded by others (3) as an inflammatory reactive pseudotumour. The glycogen content in the pale cells, considered to be the result of a reactive disturbed keratinization (9) may on the other hand, suggest a tumour of sweat duct origin.

In the following report two cases of CCA are described, in which histological evidence of a relationship of the lesion to the epidermal sweat duct was obtained.

CASE REPORTS

Case 1. A 47-year-old woman had during 1 year observed an indolent light pink, oval node with a rough surface, $1 \times 1\frac{1}{2}$ cm in size, located above the left knee. A complete excision was made of the tumour, which was then subjected to histological examination. The following stains were used: Haematoxylin-eosin, PAS, PAS-diastase, Best-Carmine red, silver impregnation according to Masson.

Case 2. A 71-year-old woman had for 3 months observed an indolent brownish, slightly shiny nodule of 1 cm diameter in size, located on the back. The nodule was excised and subjected to histological examination in the same way as in case one.

Following epidermal changes were found: In the first case (Fig. 1) the acanthosis was rather regular, more psoriasiform. In the second case the acanthotic epidermis showed basal strands growing downwards, enclosing connective tissue islands (Fig. 2). In both cases the acanthoma was composed of enlarged Malpighian cells which, by their pale appearance and large cytoplasma, contrasted

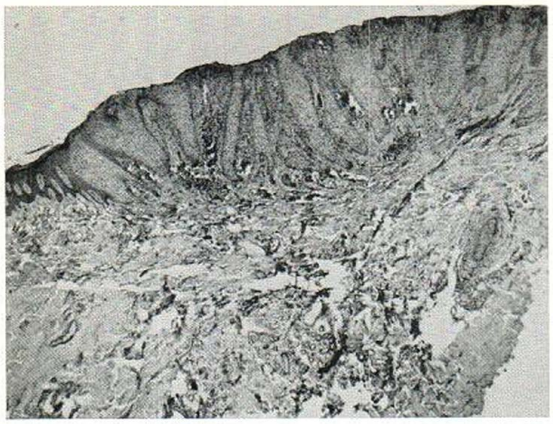

Fig. 1. Case 1: Psoriasiform pale cell acanthosis, sharply delineated against the normal epidermis.

with the cells in the surrounding normal epidermis. The lateral margins of both tumours were abrupt, sharply delineated against the normal epidermis. In the second case a sharp margin was seen between the pale cells and suprabasal cells. The epidermal cells immediately in contact with the pale cells were flattened (Fig. 3). These flattened cells signify a pressure effect of the pale cells against the epidermis. The basal layer was in both cases interrupted in some places and replaced by the pale cells (Fig. 4). In both cases concentrically arranged clear cells from the intra-epidermal sweat duct wall could be noted merging into the rest of the acanthoma (2, 3, 5). An increased concentration of glycogen in the pale cells was a constant finding as shown by PAS-diastase staining. In silver-stained sections a total absence or considerable reduction of pigment was observed in the basal layer.

Vasodilatation and slight cellular inflammatory infiltration were present in the papillary and subpapillary layers. The sweat ducts in the corium were partially dilatated and some of them contained an amorphous hyalin material. No iron-blue was present in slides treated with potassium ferrocyanide.

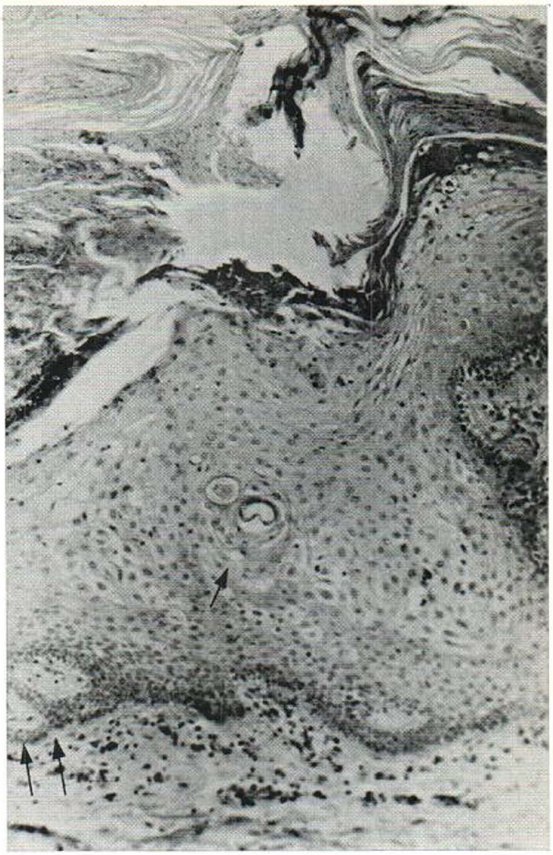

Fig. 2. Case 2: Concentrically arranged pale cells around the lumen of the intra-epidermal sweat duct merging in the acanthoma (*arrow*). Included connective tissue islands (*twin arrows*).

DISCUSSION

The two cases studied fulfilled the established histological criteria of CCA. In both of them a direct

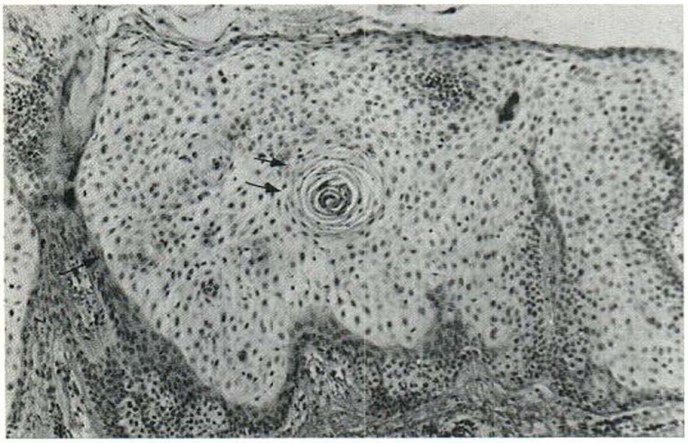

Fig. 3. Case 2: Flattened darker suprabasal cells at the border of the pale cell acanthoma. Note sharp delineating margin (*arrow*). Concentrically arranged pale cells around the epidermal sweat duct merging in the acanthoma (*twin arrows*).

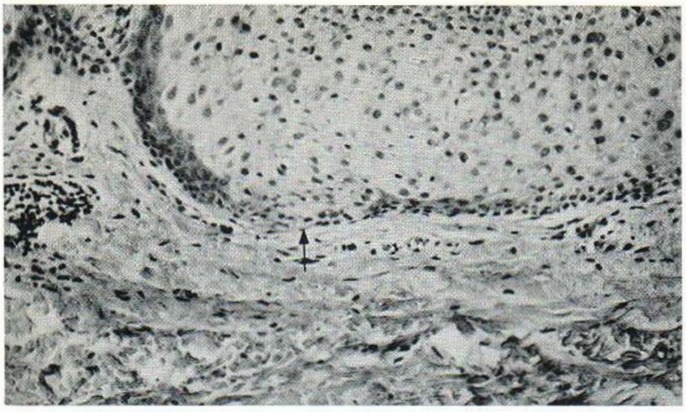

Fig. 4. Case 2: Pale cells replacing basal cells (*arrow*).

continuity could be demonstrated between pale cells concentrically arranged around sweat duct lumen and the acanthotic part of the epidermis (2, 3, 5). The fact that there was a sharp demarcation between pale cells replacing in some places the basal layer and the surrounding normal basal layer (Fig. 4) suggests that the acanthoma does not represent an inflammatory reactive tumour (3) with a disturbed keratinization (9). Decreased enzymic reactions for phosphorylases, succinic dehydrogenase, and cytochrome oxydase have been considered to differentiate this tumour from other sweat gland tumours (11). However, persistence of those enzymatic qualities depends upon the grade of differentiation toward some adnexal structure. According to Hashimoto et al.: "If the tumor under study does not demonstrate an appreciable degree of differentiation, this method is, of course, useless" (6). According to our findings a possible genetic relationship to the poral epithelium is suggested.

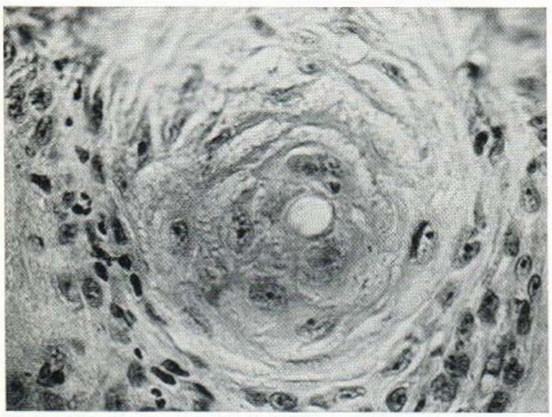

Fig. 5. Case 1: Concentrically arranged pale cells around a tiny sweat duct lumen in the acanthoma.

REFERENCES

1. Degos, R., Delort, J., Civatte, J. & Poires Baptista, A.: Tumeur épidermique d'aspect particulier. Acanthome à cellules claires. Ann Derm Syph *89:* 361, 1962.
2. Degos, R. & Civatte, J.: Clear cell acanthoma. Experience of 8 years. Br J Dermatol *83:* 248, 1970.
3. Dupperat, B., Mascaro, I. M. & Mascaro-Galy, C.: Sept cas d'acanthoma à cellules claires. Arch Belg Derm Syph *22:* 55, 1966.
4. Ebner, H.: Das Klarzellakanthom. (Acanthome à cellules claires.) Z Haut Geschlechtskr *43:* 535, 1968.
5. Fine, R. M. & Chernosky, M. E.: Clinical recognition of clear cell acanthoma (Degos). Arch Dermatol *100:* 559, 1969.
6. Hashimoto, K., Dibella, R. J. & Lever, W. F.: Clear cell hidradenoma. Histological, histochemical and electron microscopic studies. Arch Dermatol *96:* 18, 1967.
7. Hollman, K. H. & Civatte, J.: Etude au microscope électronique de l'acanthome à cellules claires. Ann Derm Syph *95:* 139, 1968.
8. Hu, F. & Sisson, J. K.: The ultrastructure of the pale cell acanthoma. J Invest Dermatol *52:* 185, 1969.
9. Mascaro, J. M., Mascaro-Galy, C. & Pinol, J.: Àpropos de l'acanthome à cellules claires. *In* XIII[e] Congrès de l'Association des Dermatologistes et Syphilographes de la Langue Française. Masson, Paris.
10. Rubio-Roig, J.: L'acanthome à cellules claires. Àpropos d'un cas. Bull Soc Fr Dermatol Syphiligr *73:* 487, 1966.
11. Wells, G. C. & Wilson-Jones, E.: Degos' acanthoma (acanthome à cellules claires). A report of five cases with particular reference to the histochemistry. Br J Dermatol *79:* 249, 1967.
12. Wilson-Jones, E. & Wells, G. C.: Degos' acanthoma

(acanthome à cellules claires). Arch Dermatol *94:* 286, 1966.
13. Zak, F. G., Martinez, M. & Statsinger, A.: Pale cell acanthoma. Arch Dermatol *93:* 674, 1966.

Received March 22, 1973

E. Neumann, M.D.
Department of Dermatology
St. Göran's Hospital
S-112 81 Stockholm
Sweden