MORPHOLOGIC ASPECTS IN PRIMARY CRYPTOCOCCOSIS OF THE SKIN

by

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Abstract

Two cases of cryptococcus infection of the skin were presented. Both – of the mammary and of the lower lip region – were admitted as probable cancers. The right diagnosis has been proved by biopsy, Alcian-Blue stain and fungus culture. The morphologic investigation showed the following characteristic features: a granuloma with dispersed proliferation of foam, epithelioid and giant cells, and with suppuration. In the cells 'empty holes' with sharp borders and some minute unstained particles are present, that in Alcian-Blue stain give a positive reaction.

The fungus disease known as torulosis (Zawirska & Derubska) (7) is caused by *cryptococcus neoformans* Vuillemin (1), Ajello et al. (1) and Brier et al. (3) underscore the very rare occurrence of primary cutaneous lesions. As presented Alkiewicz (2) and others the cryptococcus produces various reactions of human tissues. The tumour stage of the disease is usually taken by the patient as cancer and he looks for medical attention in oncologic departments. When ulceration – incision biopsy is taken; when a tumour – needle-biopsy. This is the routine procedure in oncology, and this is why the first suspicion of fungus disease can, and ought to, be made from the routinely stained histologic slides, but it is very difficult because in haematoxyline + cosine stain the cryptococcus itself is seen only as minute shadow-particles and can be easily overlooked. For the oncologic pathologist – the general morphologic picture of the pus, granuloma and inflammatory reaction, and not the fungus itself, is the most important for the primary diagnosis. This is why we would like to draw your attention especially to pictures and patterns more or less characteristic for the disease in routine histologic-oncologic diagnostic.

Material and methods

In the period of last 10 years 2 cases of cryptococcal skin tumours were

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Accepted for publication: 1.X.1973.
observed in the Oncologic Department of the C.O.D.D. Poznań and treated in the Dermatologic Clinic of the Medical Academy in Poznań: a 59 years old woman admitted as ‘mammary cancer’, and a 67 years old woman – as ‘lower lip cancer’. In both cases the morphologic investigation of the biopsy (L.A.P.) was the first to call attention of a possible fungus disease. This was followed by mycologist (J.A.) consultation, and additional stainings with Alcian-Blue and PAS, later fungus-culture showed definitely the presence of cryptococcus. The tumors have been excised and treated (J.A. & Z.N.). Control-examinations showed no signs of the disease for more than 2 years. In both cases morphologic and mycotic investigations of the operative materials were made together by the mycologist (J.A.) and the pathologist (L.A.P.).

Results

Case 1

Needle-biopsy

Pus with fragments of granuloma were obtained. The matter contains well preserved leucocytes and dispersed 'granular debris'. The latter is important, as it does not exist in other inflammatory reactions. Alcian-Blue stain shows that the 'granulations' are in reality fungus elements, and their structure is here and there well preserved (fig. 6a). The fragments of granuloma show – at first look – a very succulent tissue, rich in capillaries, leucocytes, plasmacells, and lymphocytes, mixed together with epithelioid and giant cells. These are dispersed, and didn’t form any tubercules. The presence of epithelioid cells, and of giant cells together with foam elements suggests the presence of one of the infective granulomas. Differentiating with tuberculosis, syphilis or simple resorption granuloma, the presence of round, minute 'empty holes' of different size is remarkable. These are present in the cytoplasma of foam, epithelioid and giant cells (figs 2a, 5), as well as in intercellular spaces (fig. 2b). In the 'holes' very minute, and nearly uncolored shadow-particles are seen; – they are very easy to overlook (figs 2a, b). More important for the diagnosis are sharply cut hole borders (fig. 6a) – they are not present when cells undergo degeneration or liquefaction. The signs presented lead to the suspicion of a fungus disease. Additional stainings by Alcian Blue (figs 2c, d) and PAS are sufficient for the definite diagnosis of cocccosis neoformans.

Operative material

The mammary tumour has been excised radically with the surroundings. On cross-section (fig. 1b) appears a multilocular abscess filled by suppuration, with a granulomatous wall infiltrating largely the neighboring skin, mammary gland, adipose and muscular tissue. Microscopic investigation shows a very prominent granuloma invading and destroying the mammary gland, adipose and muscular tissue, and the subcutis. The epidermis itself is invaded only on a very small place in which a minute basatcell epithelioma has been found (this could be the place of infestation during field's work with grain in the country). The complex examination of the whole lesion shows that the fungus is multiplying in the abscess-wall, built of foam, epithelioid and giant cells. The spores are developing intracellularly in the cytoplasm of the cells (fig. 5, 6a, b, c). Only after a certain time cells undergo destruction (fig. 6c), rupture, and the fungus becomes transmitted in intracellular spaces, and in the supplicative material of the abscess. In tissues bordering the lesion infiltration of lymphocytes, plasmacells and leucocytes occur, with proliferation of connective tissue elements, giving rise to macroscopic tumour formation. In the muscles a reactive transformation occurs, giving rise to rhabdomyoblasts formation.