Metastatic mucus-secreting mammary carcinoma in the eyelid

Report of two cases

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Metastatic tumours to the eyelids are uncommon, according to Riley (1970) and Aurora and Blodi (1970), in contrast to those of the uvea, which constitute the second most frequent among malignant intraocular tumours of adults as described by Bloch and Gartner (1971), by Ferry (1967), and by Albert, Rubenstein, and Scheie (1967). This paper describes two interesting features of two cases of mammary carcinoma metastatic to the eyelids. In one case the neoplasm exhibited a histiocytoid appearance and was initially misdiagnosed as fibroxanthoma and in the other case the lid lesion appeared before detection of the primary tumour in the breast, which proved to be an infiltrating ductal carcinoma.

Material and methods

In each case, paraffin-embedded tissues from the lid lesions and the primary mammary tumours were sectioned at 6 to 8 μ and stained with hematoxylin and eosin, Alcian blue, mucicarmine, and the periodic acid-Schiff techniques.

Case reports

Case 1, a 62-year-old Caucasian female, underwent a left radical mastectomy because of an infiltrating ductal carcinoma in April, 1966 (Fig. 1). She was asymptomatic until August, 1972, when

FIG. 1 Case 1. Mastectomy specimen shows an infiltrating ductal carcinoma forming small cords with "Indian file" arrangement. Haematoxylin and eosin. $\times 86$

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a mass was noted in the right upper lid. A biopsy of this lesion was performed elsewhere and diagnosed as fibroxanthoma by the contributing pathologist. The case was studied in consultation at the Wills Eye Hospital and at the Armed Forces Institute of Pathology, at which institutions it was diagnosed as metastatic mucus-secreting breast carcinoma (histiocytoid type). The patient also had a tumour in the right parotid region, which was diagnosed histologically as benign mixed tumour of the parotid gland. She was examined at the Oculoplastic Service, Wills Eye Hospital in April, 1973, and bilateral nontender masses were noted in the upper lids (Fig. 2), with more marked involvement of the right upper lid. She had no ocular complaints. Visual acuity was 20/40 in the right eye and 20/25 in the left. Radiological examination revealed no evidence of pulmonary or skeletal metastases.

FIG. 2 Case 1. Swelling and nodular induration of the eyelids, with more marked involvement of the right lids

Excision of the lid lesions was performed and microscopical examination revealed fibroadipose tissue and skeletal muscle infiltrated by tumour cells arranged singly or in small nests (Figs 3 and 4).

FIG. 3 Case 1. Scattered histiocytoid tumour cells (arrows) with pyknotic, slightly eccentric nuclei and abundant foamy cytoplasm. Haematoxylin and eosin. $\times 195$

FIG. 4 Case 1. Higher magnification of one area of Fig. 3, showing histiocytoid neoplastic cells containing occasional intracytoplasmic vacuoles (arrow). Haematoxylin and eosin. $\times 440$

In some areas an "Indian file" arrangement was evident. The tumour cells contained round to oval hyperchromatic nuclei and abundant amphophilic foamy cytoplasm in which small or large vacuoles were present (Fig. 4). Rare mitotic figures were noted. The intracytoplasmic vacuoles contained varying amount of hyaluronidase-resistant Alcian blue-positive material that also stained with the mucicarmine and periodic acid-Schiff techniques.

The lid metastasis was cytologically similar to the initial carcinoma of the left breast. A mass was noted in the right breast as well as a skin nodule on her back. Histopathological examination of these lesions revealed respectively an adenocarcinoma of the right breast and metastatic adenocarcinoma to the skin of the back. The carcinoma of the breasts and the metastases to the skin of the eyelid and back displayed striking cytological similarity.

Case 2, a 57-year-old Caucasian female, was referred to the Oculoplastic Service, Wills Eye Hospital, with a history of swelling in the right lower eyelid (Fig. 5) of 3 months' duration. There was no previous history of cancer surgery or a neoplasm elsewhere in the body. Vision was 20/20 in both eyes. Chest x rays and skeletal survey revealed no abnormalities.

The palpebral mass was excised and submitted for histopathological examination. Microscopically

FIG. 5 Case 2. Swelling of right lower eyelid caused by metastatic mammary carcinoma

the muscle and fibroadipose tissue were infiltrated by atypical neoplastic cells forming sheets and cords, some of which exhibited an "Indian file" pattern. The tumour cells were composed of round to oval hyperchromatic nuclei with prominent intracytoplasmic vacuoles. Some tumour cells displayed a signet-ring appearance (Fig. 6) with peripheral displacement of nuclei. Perineural neoplastic invasion was noted in some areas. Stains for mucopolysaccharides revealed the cytoplasmic vacuoles to contain hyaluronidase-resistant Alcian blue-positive material that also stained with the mucicarmine and periodic acid-Schiff techniques. The histopathological diagnosis was metastatic mucus-secreting adenocarcinoma.

FIG. 6 Case 2. The eyelid mass shows that many tumour cells contain large intracytoplasmic vacuoles (signet-ring cells) (arrows). Haematoxylin and eosin. $\times 425$

On discharge, the referring physician was advised to examine the breasts for the probable site of origin of the neoplasm. One month later, a small lesion was detected in the patient's left breast. Mammography revealed a small irregular mass with focal calcification. Biopsy of this lesion confirmed the presence of an infiltrating ductal carcinoma with a cytological appearance similar to the lid metastasis. A complete systemic evaluation, including x rays of the chest, gastrointestinal tract, gall bladder, paranasal sinuses, genito-urinary tract, and skeletal survey were normal, as were the thyroid and liver scans.

Radiation therapy was started. No other metastatic lesions have been detected a year after the appearance of the lid lesion.

Discussion

Riley (1970) noted that metastatic tumours are rare in the eyelids and are usually associated with primary neoplasms in the breast, lung, skin, and gastrointestinal tract. Metastatic mammary carcinoma to the lids usually occurs in patients with disseminated carcinoma-tosis, although metastasis to the lids alone has been reported by Lessans (1973) and Amoni, Rodrigues, and Shannon (1973). Hood, Font, and Zimmerman (1973) described thirteen

cases, in five of which the lid lesions preceded from 2 to 12 months detection of the primary tumour in the breast. In Case 2 described in the present report, the lid tumour preceded recognition of the primary mammary carcinoma by 4 months. Brownstein and Helwig (1972) observed that cutaneous lesions metastatic from carcinoma of the breast are usually adenocarcinomas or undifferentiated carcinomas.

In Case 2 of the present report, many tumour cells disclosed a signet-ring appearance. Brownstein and Helwig (1973), in their study of metastatic lesions to the skin, occasionally noted signet-ring cells, especially from adenocarcinomas of the stomach but also in metastatic lesions from carcinoma of the lung and breast. Of 724 patients in their series, cutaneous metastases preceded detection of the primary tumour in 150 patients (20 per cent.), and in 90 per cent. of the latter, histological documentation of the primary tumour was established within 6 months.

In Case 1 a second primary carcinoma was found in the opposite breast. Brownstein and Helwig (1973) similarly reported a second primary mammary tumour in five women with cutaneous metastases from cancer of the breast.

A recent study by Hood and others (1973) described eight of thirteen cases of metastatic mammary carcinoma to the eyelid exhibiting an unusual histiocytoid pattern. In Case 1 of the present paper, this histiocytoid appearance was noted both in the lid metastasis as well as in the primary breast tumour. Awareness of this unusual pattern of metastatic carcinoma of the breast is important in the differentiation of this tumour from histiocytomas and other noncancerous lesions such as xanthoma, granular cell myoblastoma and others. In Case 1, the diagnosis of the contributing pathologist was fibroxanthoma.

Helpful clues to the recognition of this neoplasm are the frequent arrangement of tumour cells in an "Indian file" pattern often forming columns one cell wide. In the series of thirteen cases reported by Hood and others (1973), eight of the tumours had mucus-containing vacuoles which were stainable with both Alcian blue and the mucicarmine technique.

Summary

Two instructive cases of metastatic mucus-secreting mammary carcinomas to the eyelids have been described. The metastatic lid lesion in the first case showed a confusing histiocytoid pattern, which was responsible for its having been initially misdiagnosed as a benign fibrohistiocytic tumour. In the second case, the metastatic lid tumour contained numerous signet-ring cells, which led to the diagnosis of metastatic carcinoma 4 months before the primary carcinoma was detected in the breast.

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