CASE REPORT

Primary mucinous carcinoma of the periorcular region: successful management with local resections over 30 years

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SUMMARY

Primary mucinous carcinoma of the skin is a rare malignant neoplasm, often with periorcular involvement, believed to originate from eccrine sweat glands. It is slow growing and locally destructive, at times forming tumour satellites. We present a case with six local recurrences treated with surgical resections over a period of 30 years. We have not been able to find longer follow-up in the literature, and believe this case may offer insight into the management of these uniquely indolent malignancies.

BACKGROUND

Though these tumours frequently recur locally, they retain the potential for metastasis to the lymph nodes and distant tissues, at between 5–15% and 2–7%, respectively.^{1 2} Internal malignancy must also be ruled out since these subcutaneous masses could represent metastatic disease. This case highlights the successful workup and long-term management of one of these lesions.

CASE PRESENTATION

A 53-year-old African American man presented in 1993 with a 3-month history of a right lateral canthal mass (figure 1). He noted that he had had two previous operations at the site in 1983 and 1989 for a ‘rare cancer without spread’, which he was told may, or may not come back. On clinical examination, there was a 1 cm non-tender, non-erythematous subcutaneous mass adjacent to the right lateral canthus. There were no overlying telangiectatic vessels, scales or ulcerations. A CT scan performed at Johns Hopkins revealed a 2 cm soft tissue mass located preseptally, anterolateral to and possibly abutting the otherwise normal right globe. The right and left orbits were unremarkable. The mass was resected using a lateral approach (figure 2), and a histopathological examination identified a lesion consistent with mucinous carcinoma. The diagnosis of the specimen previously resected from this location was confirmed to be mucinous carcinoma both at the Prince George’s Hospital (Cheverly, Maryland), as well as by the Armed Forces Institute of Pathology (Washington DC). The mass recurred locally and was resected a total of six times including resections in 1999, 2005, 2006 and 2010 (figures 3 and 4). On gross examination, the most recent recurrence consisted of a globular soft tissue fragment 1 cm in diameter

Figure 1 Clinical appearance of lesion (1993).

with a fibrous external surface and grey-white cut surfaces. The specimen was processed routinely.

Histological examination revealed a non-encapsulated, poorly circumscribed tumour with thin, delicate fibrous trabeculae enclosing large pools of mucin (figure 5). Nestled within these pools were benign appearing epithelial islands forming branch-like and duct-like structures (figure 6). Over 90% of the mass was comprised of mucin, which was periodic acid-Schiff positive (figure 7). The epithelial cells were strongly positive for cytokeratin 7 (CK7) (figure 8) and oestrogen receptor (figure 9), but negative for all other markers tested including cytokeratin 20 (CK20) and carcinoembryonic antigen (CEA). No ‘dirty’ necrosis (necrotic eosinophilic foci containing nuclear debris), foci of acute inflammation or mitotic figures were identified. A diagnosis of recurrent primary mucinous carcinoma was rendered.

OUTCOME AND FOLLOW-UP

To date, the patient is clinically well with no ocular comorbidities, visual disturbances or discomfort.

Figure 2 Intraoperative appearance at Johns Hopkins Hospital (1993).

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Figure 3 Clinical appearance of latest recurrence (2010).

There has been no evidence of any regional (preauricular, sub-mandibular or anterior cervical) lymph node involvement. Though systemic evaluation by an oncologist has been recommended, the patient has been disinclined to pursue further evaluation.

DISCUSSION

Primary mucinous carcinoma of the skin is rare, but should be included in the differential diagnosis of subcutaneous swellings in the head and neck, especially in the periocular region. Distinguishing primary adnexal malignancy from visceral adenocarcinoma metastasising to the skin can be extremely difficult on histological grounds alone, but positivity for tumour protein p63 is associated with adnexal origin.³ Clinical input, including the absence of a primary tumour site, and tumour location are often crucial to this distinction. In a large series of patients with cutaneous metastasis from an internal malignancy, only 6% had metastases to the face.⁴ Kazakov *et al* demonstrated that mammary neoplasms have a strong tendency to manifest at the chest wall, breast and axilla and rarely involve the head and neck.⁵ They similarly demonstrated that mucinous carcinoma of intestinal origin is more likely to be detected after local extension to internal structures or the abdominal wall and overlying skin rather than distant metastasis. In their series of 63 cases of primary and secondary mucinous carcinoma of the skin, they also found dirty necrosis to be a consistent and specific indicator of intestinal origin. We did not identify any dirty necrosis in the most recent specimen. The negative staining for CK20 and CEA, along with the patient's clinical history, makes a metastatic lesion from the intestines or colon highly unlikely. In our case, as in many mucinous carcinoma cases in the skin, the diagnostic difficulty comes with differentiating a primary skin tumour from a metastatic lesion from the breast. Both are CK7 positive,

Figure 4 Postoperative appearance after resection (2010).

Figure 5 Tumour present as lobulated pools of mucin separated by thin septum infiltrating dermal and subcutaneous tissues with minimal peritumoural tissue reaction or inflammation. Floating strands and cords of small, eosinophilic tumour cells are evident (H&E, ×100 original magnification).

can stain for oestrogen and progesterone receptors, and can appear histologically identical.⁶ Metastasis from a primary mucinous carcinoma of the breast is unlikely in this male with no breast or axilla masses or symptoms.

With primary mucinous carcinoma of the skin being the most likely diagnosis, the treatment style must be adjusted to balance the low mortality associated with these lesions, with the high rate of local recurrence and the high morbidity of aggressive treatment. Surgical resection, even of recurrent lesions, is superior to chemotherapy or radiation. In 20 cases of mucinous carcinoma of the eyelid studied by Wright *et al* with a follow-up ranging from 7 months to 15 years with a median of 8 years, eight patients had one or multiple recurrences, and one patient had metastasis to the submandibular lymph nodes. Eight patients died of other causes and 12 patients were alive and well.¹ So, like prostate cancer, primary mucinous carcinoma of

Figure 6 Tumour nests and 'islands' display minimal nuclear pleomorphism, form small glands and display intracytoplasmic vacuoles (H&E, ×400 original magnification).

Figure 7 Mucinuous material stains strongly with periodic acid Schiff stains and is diastase-resistant. Intracytoplasmic vacuoles show mucin (PAS, $\times 400$).

the skin is a tumour that patients are more likely to die with than to die from.⁷

This patient's tumour was positive for oestrogen receptors which Nau'shil Randhawa and Marcus Wong proposed could suggest a role for antioestrogenic therapy to reduce recurrence risk.⁸ However, mucinous carcinoma has been found to be resistant to both chemotherapy as well as radiation as primary therapy.^{9–12} Care must be taken when excising these periocular lesions to preserve the complex mechanical functioning of the canthal structures, limit damage to the upper branch of the facial nerve¹³ as well as to preserve cosmesis. Our patient has had excellent results with repeat local resection over 30 years. Unlike tumours such as pleiomorphic adenomas of the lacrimal or salivary glands in which incomplete excision can result in malignant transformation, this is not a documented feature in these tumours. Diego Marra *et al* have achieved promising results combining the Mohs micrographic surgical technique with immunohistochemistry for margin control,¹⁴ and these may be the new tools in the ophthalmologists' armamentarium

Figure 8 Tumour nests and 'islands' show strong immunoreactivity to cytokeratin 7 (diaminobenzidine, $\times 400$ original magnification).

Figure 9 Tumour cells show strong nuclear immunoreactivity to oestrogen receptor (diaminobenzidine, $\times 400$ original magnification).

when managing these lesions. Our long-term follow-up of this patient demonstrates an approach for optimally treating these lesions while limiting long-term morbidity. While metastasis is rare, we would still recommend a systemic workup. Though this case offers insight into the long-term behaviour of these tumours and their management, an even longer term follow-up with an expanded series of patients is necessary to better understand these enigmatic masses.

Learning points

- Point 1: primary mucinous carcinoma of the skin adnexa is rare, but should be included in the differential diagnosis of subcutaneous swellings in the head and neck, especially in the periorbital region.
- Point 2: Distinguishing adnexal malignancy from metastatic adenocarcinoma can be extremely difficult on histological grounds alone. Clinical inputs, including the absence of a primary site tumour, are often crucial to the distinction.
- Point 3: A relatively less aggressive management approach comprising of surgical resections, even of recurrent lesions, is superior to chemotherapy or irradiation.

Competing interests None.

Patient consent Obtained.

Provenance and peer review Not commissioned; externally peer reviewed.

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