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Adenoid cystic carcinoma of the maxilla – the value of histopathology in diagnosing a second primary

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Abstract
Adenoid cystic carcinoma is the commonest tumour of minor salivary glands. In the case described here a pulmonary mass was found. This was likely to be a distant metastasis, particularly as the primary tumour was of cribriform subtype with perineural invasion and resection was microscopically incomplete. However, surgical excision of the pulmonary mass enabled histopathological studies to be carried out which found it to be an unrelated bronchioloalveolar carcinoma.

Key words: Salivary gland neoplasms; Carcinoma, adenoidcystic; Carcinoma, bronchioloalveolar

Introduction

Adenoid cystic carcinoma is an aggressive, invasive tumour. Distant metastases affect the lungs or bones. The clinical course is often relentless and fatal. Long-term survival can be achieved particularly with combined surgery and radiotherapy. The prognosis is worse with cribriform and solid histological subtypes, recurrent local disease and distant metastases (Matsuba *et al.*, 1986). Perineural spread is associated with local invasion (van der Wal *et al.*, 1990). This case was of cribriform subtype, tumour was microscopically present at the resection margins and perineural invasion was present, hence the prognosis was poor, and the presence of a pulmonary mass suggested a distant metastasis. Histology of this mass, however, showed an unrelated mucus-secreting tubulo-papillary bronchioloalveolar carcinoma.

Case report

A 57-year-old lady was found to have a swelling of the left soft palate during a routine dental check-up. CT scans showed a 3 × 2 cm mass in the left maxillary antrum, with destruction of the medial wall. Biopsy of the tumour revealed an adenoid cystic carcinoma. Although there were no respiratory symptoms or signs, chest X-ray showed an opacity in the mid-zone of the left lung. The patient's only symptoms had been intermittent left-sided otalgia for the preceding six months. She had never been a smoker and rarely drank alcohol. She had been born in Finland, but had lived in England as a housewife for 35 years.

The tumour was resected surgically. It filled the maxillary antrum, had eroded across the midline of the hard palate, and extended to the inferior orbital plate, and lateral wall of the nasal cavity. A left maxillectomy was performed, and a grommet inserted into the left tympanic membrane. A dental obturator was fitted subsequently.

Histopathology confirmed adenoid cystic carcinoma of a cribriform pattern. Extensive perineural invasion was present, with tumour at the resection margins and in biopsies from the pterygoid soft tissues (Figure 1). The maxillary cavity received post-operative radiotherapy of 60 Gy in 30 fractions over 43 days.

A CT scan performed five months later showed further pulmonary opacities, in addition to the left mid-zone mass. As it was not possible to differentiate between metastases from the maxilla or an unrelated bronchogenic primary tumour, the masses were excised by lingualectomy via left thoracotomy. Histopathology showed that this tumour was a bronchioloalveolar carcinoma, with no features to suggest metastasis from the maxilla (Figure 2).

It is now three years since initial diagnosis, and the patient remains well with no sign of recurrence.

Discussion

Adenoid cystic carcinoma (ACC) was first described by Billroth in 1856, and called 'cylindroma' due to its characteristic histological appearance (Spiro *et al.*, 1974; Chilla *et al.*, 1980; Szanto *et al.*, 1984). It is an uncommon tumour, accounting for fewer than one per cent of all head and neck malignancies and fewer than 10 per cent of all salivary neoplasms. It is, however, the commonest malignant tumour of minor salivary glands (Spiro *et al.*, 1979; Chilla *et al.*, 1980; Matsuba *et al.*, 1984). Characteristic features include aggressive, slow growth, with insidious destruction of surrounding tissues and perineural invasion. The palate is the most commonly affected site and these tumours have the best prognosis (Nascimento *et al.*, 1986).

Three histological patterns of growth have been described: solid, cribriform, and tubular (Matsuba *et al.*, 1986; Nascimento *et al.*, 1986). The World Health Organization (WHO) histological definition is 'an infiltrative malignant tumour having a very characteristic cribriform appearance. The tumour cells are arranged as small duct-like structures or larger masses of myoepithelial cells disposed around cystic spaces to give a cribriform or lacelike pattern' (Thackray and Sobin, 1972). Perineural spread occurs more often in tumours with local extension and if surgical resection margins are positive, but is not

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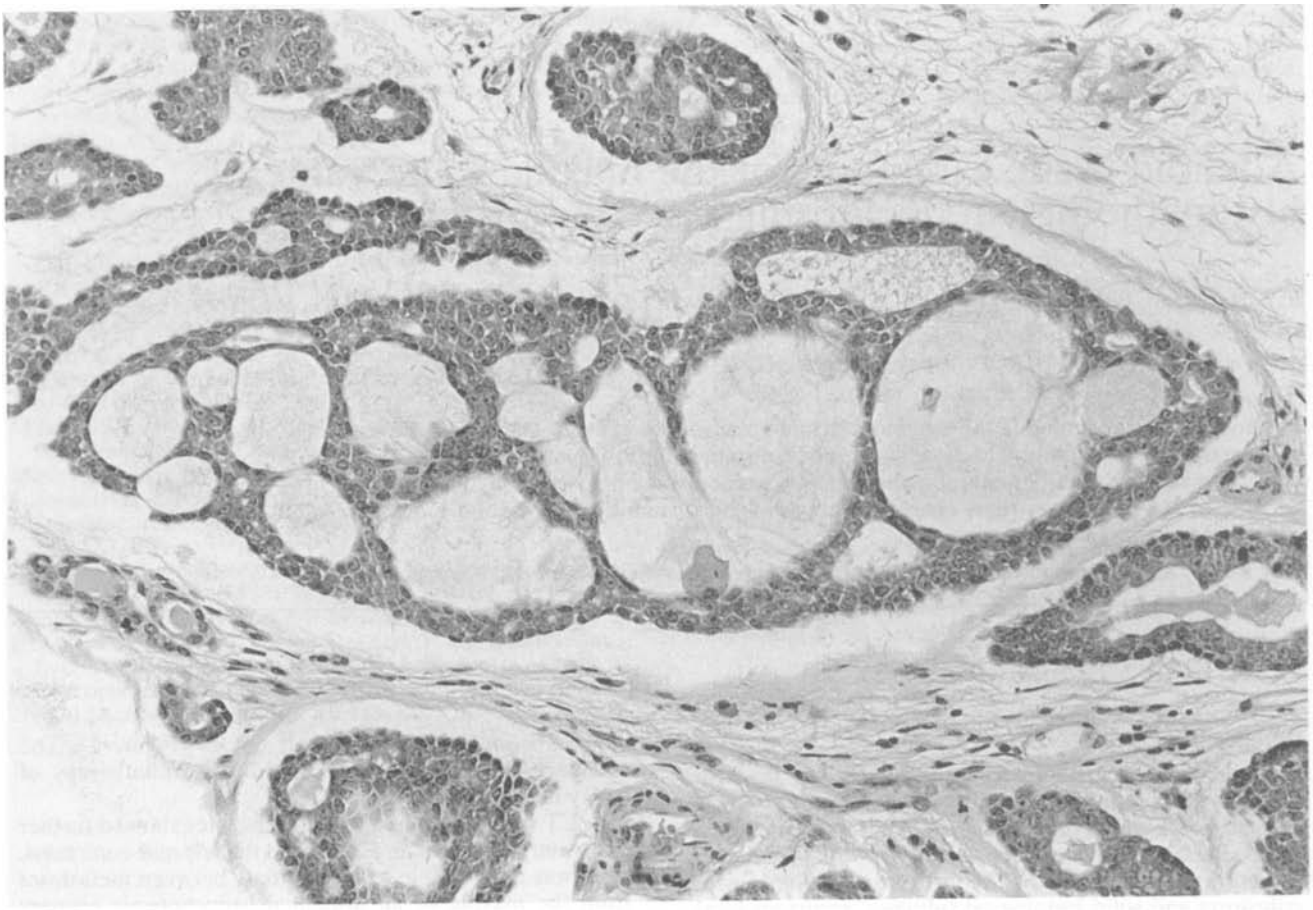

FIG. 1
Adenoid cystic carcinoma showing the typical cribriform and glandular morphology (H & E; × 90).

related to primary site, size of tumour or presence of distant metastases (van der Wal *et al.*, 1990).

Although spread to regional lymph nodes is rare, distant metastases, particularly to lungs and bone, are more common and often unpredictable. They can occur 10 years after initial therapy (Matsuba *et al.*, 1984). The clinical course is often relentless with a high incidence of local recurrence and distant metastases. Many patients eventually die of their disease. However, long-term survival and palliation can be achieved even with incurable recurrent disease (Conley and Dingman, 1974; Spiro *et al.*, 1974; Perzin *et al.*, 1978; Matsuba *et al.*, 1984). Control of local disease is best achieved with combined surgery and radiotherapy. The cribriform subtype is more invasive and less salvageable than the tubular subtype, but the prognosis is worst with the solid subtype, recurrent local disease, and distant metastases (Matsuba *et al.*, 1986).

The histological findings in this case were of adenocystic carcinoma of the maxilla with areas of cystic and cribriform pattern. There was extensive perineural invasion, and tumour was present at the resection margins.

Bronchioloalveolar carcinoma of the lung (BAC) was first described by Delarue and Graham (1949), who proposed that it was a specific entity which arose from alveolar epithelium in multicentric fashion and carried an unfavourable prognosis. The incidence appears to be rising (Barsky *et al.*, 1994). BAC has provoked controversy in many aspects, including cell of origin, biological behaviour and classification (Bennett and Saser, 1969). As a consequence of this, many alternative names have been applied to it; alveolar cell carcinoma, alveolar cell tumour, pulmonary adenomatosis, bronchiolar carcinoma and bronchioloalveolar carcinoma (Liebow, 1960). Ultrastructural studies suggest that the cell of origin may be the Clara cell, Type II pneumocyte, or ciliated bronchiolar cells (Greenberg *et al.*, 1975; Jaques and Currie, 1977; Kimula, 1978). Immunoperoxidase staining for surfactant shows that some BACs originate from Type II pneumocytes (Singh *et al.*, 1981). Two histopathologic types have been described, and are thought to influence prognosis. Type 1 is associated with mucus production and likely to be multicentric, whereas type 2 produces less mucus and is likely to be solitary. The five-year survival of type 1 is 26 per cent, and of type 2 is 72 per cent (Manning *et al.*, 1984).

This case demonstrated a mucus-secreting adenocarcinoma with a tubulopapillary pattern. No tumour was present in sections of bronchus or two hilar lymph nodes.

The appearance of a lung mass in a patient with proven adenoid cystic carcinoma is highly suspicious of metastatic spread. In this case the risk was further increased by perineural infiltration and positive surgical resection margins of the maxillary. The finding of an unrelated bronchioloalveolar carcinoma was therefore unexpected, and has not previously been described. The prognosis of this case of ACC is adversely affected by its occurrence in a minor, not major, salivary gland; the presence of perineural invasion, cribriform histological subtype and positive surgical resection margins. The prognosis of the BAC is adversely affected by its mucus production and multicentric appearance. However both tumours have

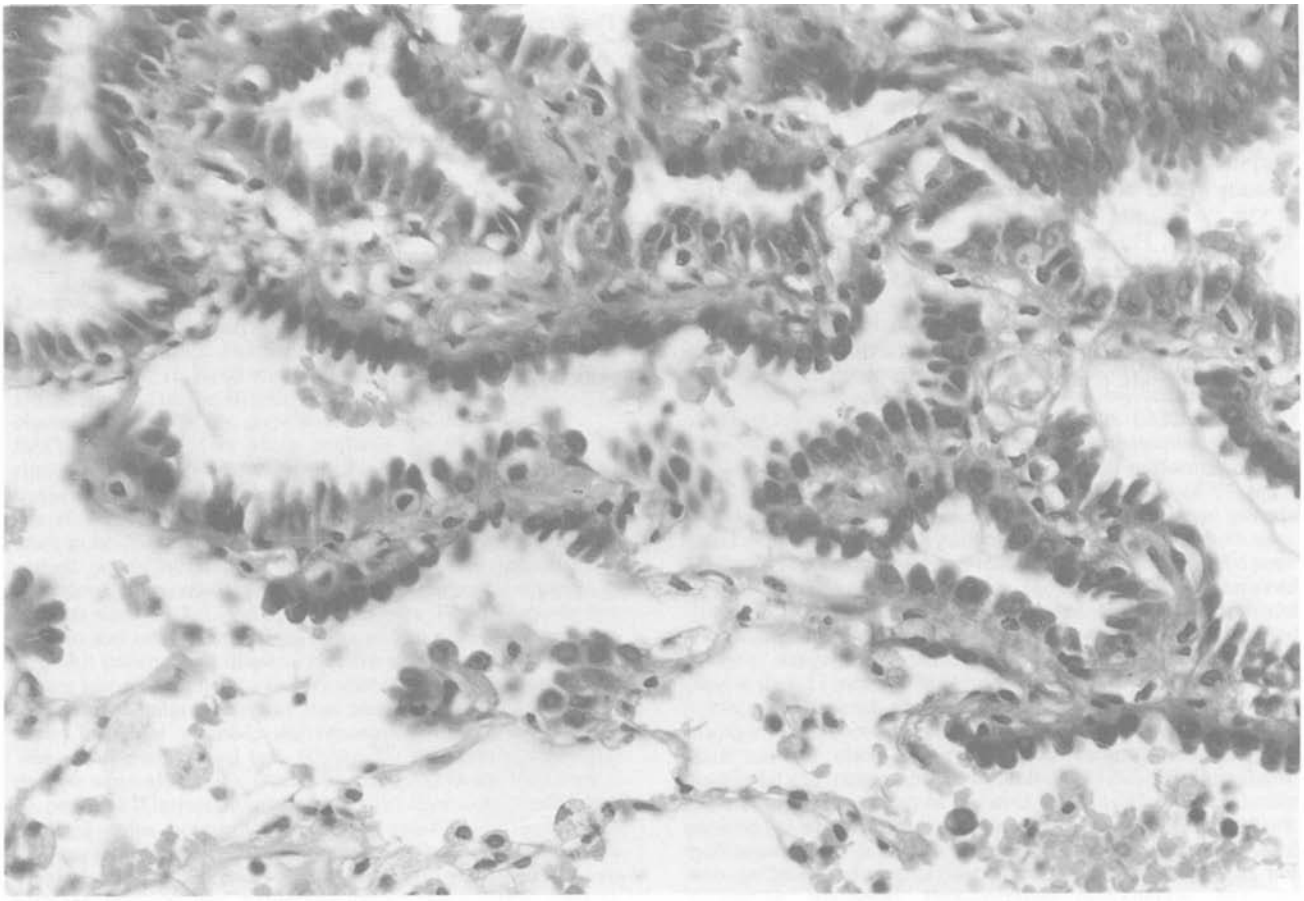

FIG. 2
Bronchioloalveolar carcinoma showing the tumour replacing normal alveolar lining cells (H & E; ×180).

been excised surgically and the maxilla has received post-operative radiotherapy. The patient is currently well with no sign of recurrence, and continues to be followed-up closely.

Conclusion

This case demonstrates the value of obtaining tissue diagnosis of suspicious masses. Although metastases may be possible, it is always important to consider a second primary tumour. Adenoid cystic carcinoma commonly metastasizes to the lung, often after an interval of several years. In this case an erroneous assumption could easily have been made that the lung mass was a metastasis, whereas histology showed that it was an unrelated bronchioloalveolar carcinoma.

References

Barskey, S. H., Cameron, R., Osann, K. E., Tomita, D., Holmes, E. C. (1994) Rising incidence of bronchioloalveolar lung carcinoma and its unique clinicopathologic features. *Cancer* **73 (4):** 1163–1170.

Bennet, D., Saser, W. (1969) Bronchiolar carcinoma: a valid clinico-pathologic entity? *Cancer* **24:** 876–886.

Chilla, R., Schroth, R., Eysholt, U., Droese, M. (1980) Adenoid cystic carcinoma of the head and neck: controllable and uncontrollable factors in treatment and prognosis. *Journal of Otolaryngology and Related Specialities* **42:** 3460–3467.

Conley, J., Dingman, D. L. (1974) Adenoic cystic carcinoma in the head and neck (cylindroma). *Archives of Otolaryngology* **100:** 81–90.

Delarue, N. C., Graham, E. A. (1949) Alveolar cell carcinoma of the lung (pulmonary adenomatosis, jagziekte): a multicentric tumor of epithelial origin. *Journal of Thoracic Surgery* **18:** 237–251.

Greenberg, S. D., Smith, M. N., Spjut, H. J. (1975) Bronchiolo-alveolar carcinoma: cell of origin. *American Journal of Clinical Pathology* **63:** 153–167.

Jaques, J., Currie, W. (1977) Bronchiolo-alveolar carcinoma: a Clara cell tumor? *Cancer* **40:** 2171–2180.

Kimula, Y. (1978) A histochemical and ultrastructural study of adenocarcinoma of the lung. *American Journal of Surgical Pathology* **2:** 253–264.

Liebow, A. A. (1960) Bronchiolo-alveolar carcinoma. *Advances in Internal Medicine* **10:** 329–358.

Manning, J. T., Spjut, H.J., Tschen, J. A. (1984) Bronchiolar carcinoma: the singificance of two histopathologic types. *Cancer* **54:** 525–534.

Matsuba, H. M., Spector, G. J., Thawley, S. E., Simpson, J. R., Mauney, M., Pikul, F. J. (1986) Adenoid cystic salivary gland carcinoma: a histopathologic review of treatment failure patterns. *Cancer* **57:** 519–524.

Matsuba, H. M., Tawley, S. E., Simpson, J. R. (1984) Adenoid cystic carcinoma of major and minor salivary gland origin. *Laryngoscope* **94:** 1316–1318.

Nascimento, A. G., Amaral, A. L. P., Prado, L. A. F., Kligerman, J., Silveira, T. R. P. (1986) Adenoid cystic carcinoma of salivary glands: a study of 61 cases with clinicopathologic correlation. *Cancer* **57:** 312–319.

Perzin, K. H., Gullane, P., Clairmont, A. C. (1978) Adenoid cystic carcinomas arising in salivary glands: a correlation of histologic features and clinical course. *Cancer* **42:** 265–282.

Singh, G., Katyal, S. L., Torikata, C. (1981) Carcinoma of type II pneumocytes: immunodiagnosis of a subtype of bronchioloalveolar carcinomas. *American Journal of Pathology* **102:** 195–208.

Spiro, R. H., Huvos, A. G., Strong, E. W. (1974) Adenoid cystic carcinomas of salivary origin: a clinicopathologic study of 242 cases. *American Journal of Surgery* **128:** 512–520.

Spiro, R. H., Huvos, A. G., Strong, E. W. (1979) Adenoid cystic carcinoma: factors influencing survival. *American Journal of Surgery* **138:** 579–583.

Szanto, P. A., Luna, M. A., Tortoledo, E., White, R. A. (1984) Histologic grading of adenoid cystic carcinoma of the salivary glands. *Cancer* **54:** 1062–1069.

Thackray, A. C., Sobin, L. H. (1972) Histological typing of salivary gland tumors. International Histological Classification of Tumours, No. 7. Geneva, World Heath Organisation, 1–28.

van der Wal, J. E., Snow, G. B., van der Wal, I. (1990) Intraoral adenoid cystic carcinoma. *Cancer* **66:** 2031–2033.

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