Squamous Cell Carcinoma

Pure squamous cell carcinoma of the breast is rare. Focal squamous metaplasia, however, is not uncommon in infiltrating duct carcinoma and is seen relatively frequently in medullary carcinoma with lymphoid stroma. There are also a few reports of squamous carcinoma arising in a cystosarcoma phylloides tumour.1,2 Tumours of the skin and nipple appendages should not be confused with mammary squamous cell carcinoma. Toikkanen3 in a recent review found only three pure squamous cell carcinomas amongst 4000 cases of primary carcinoma of the breast. The tumours are usually large with a central cystic cavity lined by obvious squamous epithelium (Figure 16.1). Areas of marked pleomorphism are common and spindle cell areas are often present. However, some authorities distinguish between squamous cell carcinoma with spindle cell dedifferentiation and pure squamous cell carcinoma without spindle cell change which they consider to be another form of metaplasia. Sometimes dissociation of the cells in a squamous cell carcinoma gives rise to a pattern resembling an angiosarcoma (Figure 16.2). The demonstration of reticulin fibres is of value in distinguishing a tumour with such a pattern from a true sarcoma, because in squamous cell carcinoma the reticulin fibres are usually present only in relation to stromal blood vessels (Figure 16.3).

There is some controversy regarding the prognosis of mammary squamous cell carcinoma and its age incidence. The tumour has usually been considered to have a poor prognosis and to occur in women older than those with other forms of mammary carcinoma. Azzopardi1, however, maintains that discrepancies in the literature regarding the prognosis and age of the patients with this type of tumour are due to failure to differentiate between pure squamous cell carcinoma, other types of mammary carcinoma with squamous metaplasia, squamous cell carcinomas arising in a pre-existing tumour and squamous cell carcinoma with spindle cell metaplasia.

Sarcomatoid Carcinoma (Pseudosarcoma)

Dedifferentiation of an infiltrating duct carcinoma may result in a spindle cell tumour with a sarcomatoid pattern, and lead to an erroneous diagnosis of sarcoma (Figures 16.4 and 16.5). However, careful examination of multiple sections will usually reveal transitions from an obvious epithelial tumour, sometimes of squamous type, to the pseudosarcomatous growth1,4.

Carcinoma with Bone and Cartilage Formation

Bone and cartilage formation in mammary carcinoma is uncommon. Although metaplastic carcinoma of the breast is usually considered to occur in elderly patients, this is not borne out by the study of Huvos et al.5 In which the mean age was similar to that of patients with conventional forms of mammary carcinoma. On average these tumours tend to be large and to behave in an aggressive fashion. This was emphasized by Huvos and co-workers5, who found that patients with tumours showing bone and cartilage formation had a poorer prognosis than those demonstrating squamous and spindle cell metaplasia. Metaplastic changes resulting in bone and cartilage formation, as shown in Figures 16.6–16.9, have been reported in association with infiltrating duct carcinoma, medullary carcinoma with lymphoid stroma and infiltrating lobular carcinoma6. Transition from the carcinoma to the heterologous element can usually be demonstrated6. Metastases occur more commonly via the bloodstream than by lymphatics, and the metastatic deposits consist of pure carcinoma without the heterologous elements6.

Apocrine Carcinoma

Mammary carcinomas containing malignant cells with abundant eosinophilic cytoplasm having a superficial resemblance to apocrine cells are not uncommon (Figure 16.10). However, true apocrine differentiation is rare, even in focal parts of a tumour, and is only seen in about 1% of all mammary carcinomas7,8. Pure apocrine carcinoma is extremely unusual.8 There is no evidence that the presence of apocrine change has any prognostic significance.

Carcinoma with Osteoclast-like (Epulis-like) Giant Cells in the Stroma

Multinucleated osteoclast-like giant cells have been described within the stroma of infiltrating duct and lobular carcinomas8-10. Haemorrhage and marked vascularity are often noted within the stroma of these tumours. Giant cells similar to those present within the primary tumour have also been seen in lymph node and visceral metastases10. These giant cells are benign and should be distinguished from tumour giant cells, including those of malignant giant cell tumour of soft parts, which has been rarely reported in the breast.11 Osteoclast-like giant cells can also occur in metaplastic tumours containing bone and cartilage. The limited follow-up information on carcinomas with osteoclast-like giant cells in the stroma precludes prognostic evaluation.
Figure 16.1  Primary squamous cell carcinoma of the breast. An example of a 'pure' squamous cell mammary carcinoma. The tumour formed a mass several centimetres in diameter. Bisection revealed a central cystic cavity surrounded by pinkish-grey, solid neoplastic tissue. This photomicrograph shows part of the cyst wall which is lined by well-differentiated, neoplastic, stratified squamous epithelium. H & E x 96

Figure 16.2  Primary squamous cell carcinoma of the breast. Another part of the tumour illustrated in Figure 16.1. Here the growth is poorly differentiated and there is marked dissociation of the carcinoma cells, both from each other and from the supporting stroma. H & E x 96

Figure 16.3  Primary squamous cell carcinoma of the breast. Sections of a very cellular and poorly differentiated part of a squamous cell carcinoma, demonstrating reticulin fibres surrounding groups of tumour cells rather than forming a pericellular network – an epithelial rather than a mesenchymal pattern. Silver impregnation for reticulin/neutral red x 240

Figure 16.4  Carcinoma of the breast with undifferentiated spindle cell component. Section of a mammary tumour from a 64-year-old woman. The photomicrograph shows closely packed, spindle shaped neoplastic cells, cut both longitudinally and transversely. In other parts, the tumour had the more conventional pattern of an infiltrating duct carcinoma. The spindle shaped cells are considered to be carcinomatous, not sarcomatous. H & E x 240

Figure 16.5  Carcinoma of the breast with undifferentiated spindle cell (sarcomatoid) component. A small island of cohesive cells, clearly epithelial in type, can be seen towards the right edge of the field. The rest of the tumour in the photomicrograph consists of spindle shaped cells with pleomorphic nuclei and eosinophilic cytoplasm: an appearance which may give a false impression of a myogenic neoplasm. H & E x 96

Figure 16.6  Carcinoma of the breast, with an osteosarcomatous component. Section of a mammary tumour from a 56-year-old woman. On the right, there is part of the carcinoma showing comedo-type necrosis. On the left, there is a very cellular neoplastic component, displaying many mitotic figures; this tissue merged with the osteoblastic growth illustrated in Figures 16.7 and 16.8. H & E x 96