Virchows Arch (1998) 433:285–287

LETTERS TO THE EDITOR

G. Seifert

Are adenomyoepithelioma of the breast and epithelial-myoepithelial carcinoma of the salivary glands identical tumours?

Sirs: I have studied with great interest both the articles on cases of adenomyoepitheliomas of the breast that recently appeared in your journal [10, 22]. The article by van Dorpe et al. [10] describes a 36-year-old woman with a very rare adenoid cystic carcinoma arising in a tubular adenomyoepithelioma. In the article by Rasbridge and Millis [22], the clinico-pathological features of seven cases of adenomyoepithelioma of the breast with features suggestive of malignancy are presented. In their series one patient died of an intracranial metastasis, and four others had local recurrences. The two cases without recurrence have been followed-up for only a year. This is a much higher recurrence rate than has been reported for series of unselected adenomyoepitheliomas.

I agree completely with the findings described in both articles and with their conclusions. However, I am a little surprised that in both articles the problem of terminology is not discussed. Adenomyoepithelioma of the breast [14] is identical in histological and immunohistochemical structure to epithelial-myoepithelial carcinoma of the salivary glands, the lung [19, 30, 32] or the skin [15, 31]. Such different terminology for a histologically well-defined tumour should be avoided: identical nomenclature should be used for tumours with identical histological architecture, regardless of their localization in different organs. I have recently published a special contribution to the terminology of the epithelial-myoepithelial carcinoma of the salivary glands and the adenomyoepithelioma of the breast [25], and WHO classifications exist.

Adenomyoepithelioma of the breast shows a typically biphasic structure, with tubules limited by an inner epithelial layer of duct-like cells and an outer layer with mostly clear myoepithelial cells. Both cell types are characterized by an immunohistochemical expression of cytokeratins and EMA in the inner cell layer and by the expression of vimentin and actin in the outer cell layer. This histological and immunohistochemical structure is identical to the epithelial–myoepithelial carcinoma of the salivary glands classified in the new revised WHO histological typing of salivary gland tumours as a discrete tumour entity [2–9, 11–13, 18, 20, 21, 23, 24, 26, 34].

The classification of Tavassoli [1, 28, 29] subdivides adenomyoepitheliomas into tubular, lobulated and spindle cell variants. The lobulated subtype corresponds to the epithelial–myoepithelial carcinoma of the salivary glands in the cellular biphasic structure, the histoarchitecture with duct-like formations surrounded by clear myoepithelial cells and the immunohistochemistry.

Genuine myoepithelial tumours with monocellular (monophasic) differentiation must be distinguished from biphasically differentiated epithelial–myoepithelial tumours. The classification of salivary gland tumours characterizes pure myoepitheliomas or myoepithelial carcinomas as separate entities, which are composed of differently modified myoepithelial cell types (clear, spindle-like, plasmacytoid or epitheloid cells) with solid, myxoid or reticular structures. The immunohistochemical pattern is irregular, but typical markers are vimentin and S-100 protein whereas actin or cytokeratin 14 are expressed in only 40–60% of cases.

A new detailed classification by Tavassoli [29] distinguishes three types of adenomyoepithelioma: adenomyoepithelioma as a benign tumour [biphasic structure, moderate tumour size (1–2 cm), recurrence in the case of incomplete excision, rare malignant course], myoepithelioma (spindle-cell adenomyoepithelioma as monophasic tumour and absence of epithelial-tubular formations) and malignant adenomyoepithelioma (tumour size of about 6 cm, biphasic differentiation, atypical spindle-cell component, invasive growth, high mitotic rate, necrosis and partly metastasis). In this classification the second type (myoepithelioma) must be excluded, because this tumour does not show biphasic differentiation.

In addition to the two papers discussed here, I have found other reports of malignant course in adenomyoepithelioma [16, 17, 27, 33]. I have tried to compare the features of epithelial–myoepithelial carcinoma of the sal-

G. Seifert
Institute of Pathology, University of Hamburg, UKE,
Martinistrasse 52, D-20246 Hamburg, Germany
Tel.: +49-40-47 17 31 74, Fax: +49-40-4 60 19 10

Table 1 Comparison between the epithelial–myoepithelial carcinoma of salivary glands and the adenomyoepithelioma of breast

Signs	Epithelial–myoepithelial carcinoma	Adenomyoepithelioma
Frequency	0.5% of all malignant salivary gland tumours	Very rare, only about 80 case reports to date
Age peak	6th–7th decade	5th–6th decade
Sex disposition	60% female	100% female
Average tumour size	2–3 cm	1.5 cm
Limitation	Mostly limited	Mostly limited
Without capsule	Rare	Rare
Mean recurrence rate	30%	13%, selected 50% [22]
Lymph node metastases	18%	Very rare
Haematogenous metastases	8–10%	Very rare
Death from tumour disease	Very rare	Very rare
Biphasic differentiation		
Duct epithelia	Cytokeratin, EMA, CEA	Cytokeratin, EMA, CEA
Myoepithelia	Vimentin, S100, actin	Vimentin S100, actin
Proportion myoepithelia/duct epithelia	Variable	Variable
Cellular atypia, mitotic activity	Rare	Rare
Diploid histograms	85–95%	No exact data
Survival rate	5 years 87% 10 years 67.5%	Only case reports Only case reports
Criteria of malignancy	Cellular atypia, increased mitotic rate, infiltrating growth, metastases	Cellular atypia, increased mitotic rate, infiltrating growth, metastases
Terminology	Epithelial–myoepithelial carcinoma	Malignant adenomyoepithelioma, malignant myoepithelioma, adenocarcinoma, sarcomatoid carcinoma

ivary glands and of adenomyoepithelioma of the breast (Table 1). The differences of the biological behaviour of the two tumour entities are based upon the fact that adenomyoepitheliomas of the breast are often detected clinically at a smaller tumour size and can be treated by complete excision or mastectomy, whereas the epithelial–myoepithelial carcinomas of the salivary glands are usually not detected until they are larger tumours. The current classification of all adenomyoepitheliomas as tumours with malignant potential results in uncertainty about treatment and prognosis.

A homogeneous terminology for tumours of the breast and other organs is proposed. Benign adenomyoepitheliomas should be classified as epithelial–myoepithelial adenoma, malignant adenomyoepithelioma as epithelial–myoepithelial carcinoma. In benign epithelial–myoepithelial adenoma malignant transformation is possible with increased tumour size. Monophasic tumours with myoepithelial cells only should be classified as benign myoepitheliomas or myoepithelial carcinomas by analogy with the tumours of salivary glands. This classification also takes account of the clinical behaviour with reference to prognosis and treatment.

References

1. Bässler R (1997) Mamma. In: Remmele W (ed) Pathologie, vol 4, 2nd edn. Springer, Berlin Heidelberg New York, pp 205–209
2. Batsakis JG, El-Naggar A, Luna MA (1992) Epithelial–myoepithelial carcinoma of salivary glands. Ann Otol Rhinol Laryngol 101:540–542
3. Brocheriou C, Auriol M, Roquancourt A de, Gaulard P, Fornes P (1991) Carcinome épithélial-myoépithélial des glandes salivaires. Etude de 15 observationes et revue de la litérature. Ann Pathol 11:316–325
4. Collina G, Gale N, Visona A, Betts CM, Cenacchi V, Eusebi V (1991) Epithelial–myoepithelial carcinoma of the parotid gland: a clinico-pathologic and immunohistochemical study of seven cases. Tumori 77:257–263
5. Corio RL (1991) Epithelial–myoepithelial carcinoma. In: Ellis GL, Auclair PL, Gnepp DR (eds) Surgical pathology of the salivary glands. Saunders, Philadelphia, pp 412–421
6. Corio RL, Sciubba JJ, Brannon RB, Batsakis JG (1982) Epithelial–myoepithelial carcinoma of intercalated duct origin. A clinicopathologic and ultrastructural assessment of sixteen cases. Oral Surg Oral Med Oral Pathol 53:280–287
7. Daley TD, Wysocki GP, Smout MS, Slinger RP (1984) Epithelial–myoepithelial carcinoma of salivary glands. Oral Surg Oral Med Oral Pathol 57:512–519
8. Dardick I (1996) Color atlas/text of salivary gland tumor pathology. Igaku-Shoin, New York, pp 191–198

9. Donath K, Seifert G, Schmitz R (1972) Zur Diagnose und Ultrastruktur des tubulären Speichelgangkarzinomas. Epithelial–myoepitheliales Schaltstückkarzinom. Virchows Arch [A] 356:16–31
10. Dorpe J van, Pauw A de, Moerman P (1998) Adenoid cystic carcinoma arising in an adenomyoepithelioma of the breast. Virchows Arch 432:119–122
11. Ellis GL, Auclair PL (1996) Tumors of the salivary glands. Atlas of tumor pathology, 3rd ser, fasc 17. Armed Forces Institute of Pathology, Washington, pp 268–281
12. Fonseca I, Soares J (1993) Epithelial–myoepithelial carcinoma of the salivary glands. A study of 22 cases. Virchows Arch [A] 422:389–396
13. Hamper K, Brügmann M, Koppermann R et al (1989) Epithelial–myoepithelial duct carcinoma of salivary glands: a follow-up and cytophotometric study of 21 cases. J Oral Pathol Med 18:229–304
14. Hamperl H (1970) The myothelia (myoepithelial cells). Normal state; regressive changes; hyperplasia; tumors. Curr Top Pathol 53:161–220
15. Hartz PH (1946) Adenomyoepithelioma of sweat gland. Report of a case. Am J Clin Pathol 16:385–389
16. Kiaer H, Nielsen B, Paulsen S, Sorensen IM, Dyreborg U, Blichert-Toft M (1984) Adenomyoepithelial adenosis and low-grade malignant adenomyoepithelioma of the breast. Virchows Arch [A] 405:55–67
17. Koyama M, Kurotaki H, Yagihashi N, et al (1997) Immunohistochemical assessment of proliferative activity in mammary adenomyoepithelioma. Histopathology 31:134–139
18. Luna MA, Ordonez NG, MacKay B, Batsakis JG, Guillamondegui O (1985) Salivary epithelial–myoepithelial carcinomas of intercalated ducts: a clinical, electron microscopic, and immunocytochemical study. Oral Surg Oral Med Oral Pathol 59:482–490
19. Nistal MN, Garcia-Viera M, Martinez-Garcia C, Paniagua R (1994) Epithelial–myoepithelial tumor of the bronchus. Case report. Am J Surg Pathol 18:421–425
20. Palma S Di (1994) Epithelial–myoepithelial carcinoma with co-existing multifocal intercalated duct hyperplasia of the parotid gland. Case report. Histopathology 25:494–496
21. Palmer RM (1985) Epithelial–myoepithelial carcinoma: an immunocytochemical study. Oral Surg Oral Med Oral Pathol 59:511–515
22. Rasbridge SA, Millis RR (1998) Adenomyoepithelioma of the breast with malignant features. Virchows Arch 432:123–130
23. Seifert G (1991) WHO histological typing of salivary gland tumours, 2nd edn. Springer, Berlin Heidelberg New York
24. Seifert G (1996) Oralpathologie I: Pathologie der Speicheldrüsen. In: Doerr W, Seifert G (eds) Spezielle pathologische Anatomie, vol 1/I, 2nd edn. Springer, Berlin Heidelberg New York, pp 590–600
25. Seifert G (1997) Terminologie des epithelial–myoepithelialen Karzinoms der Speicheldrüsen und des Adenomyoepithelioms der Brustdrüse. Onkologe 3:666–671
26. Simpson RHW, Clarke TJ, Sarsfield PTL, Gluckman PGC (1991) Epithelial–myoepithelial carcinoma of salivary glands. J Clin Pathol 44:419–423
27. Tamura S, Enjoji M, Toyoshima S, Terasaka R (1988) Adenomyoepithelioma of the breast. A case report with an immunohistochemical study. Acta Pathol Jpn 38:659–665
28. Tavassoli FA (1991) Myoepithelial lesions of the breast: myoepitheliosis, adenomyoepithelioma, and myoepithelial carcinoma. Am J Surg Pathol 15:554–568
29. Tavassoli FA (1992) Pathology of the breast. Appleton & Lange, Norwalk, pp 607–608
30. Tsuji N, Tateishi R, Ishiguro S, Terao T, Higashiyama M (1995) Adenomyoepithelioma of the lung. Am J Surg Pathol 19:956–962
31. Wallis NT, Banerjee SS, Eyden BP, Armstrong GP (1997) Adenomyoepithelioma of the skin: a case report with immunohistochemical and ultrastructural observations. Histopathology 31:374–377
32. Wilson RW, Moran CA (1997) Epithelial–myoepithelial carcinoma of the lung: immunohistochemical and ultrastructural observations and review of the literature. Hum Pathol 28:595–600
33. Young RH, Clement PB (1988) Adenomyoepithelioma of the breast. A report of three cases and review of the literature. Am J Clin Pathol 89:308–314
34. Zocchi M, Nicosia G, Ramponi A, Pisani P, Boldorini R (1995) Carcinoma epitelial-mioepiteliale della parotide: descrizione cito-istologica di un caso. Pathologica 87:534–553