

Squamous cell carcinoma of the larynx with sarcoma like stroma

by *H. S. Ahluwalia*

Division of Pathology
Institute of Medical Research,
Kuala Lumpur.

and *S. Kandiah*

Department of Oto and Rhinology,
General Hospital,
Kuala Lumpur.

Hardarshan Kaur

Department of Pathology,
General Hospital,
Kuala Lumpur.

Introduction

CARCINOMA is the commonest malignant growth of the larynx, and in a great majority of the cases, it is a squamous cell carcinoma. Occasionally, basal cell carcinomas and adeno-carcinomas develop in this location (Anderson, 1961). Rarely however, we encounter a peculiar laryngeal tumour which microscopically shows a bimorphic pattern; there is an interesting sarcoma-like connective tissue stroma and a relatively diminutive carcinomatous component. Because of the bizarre and severe microscopic pleomorphism of the stromal spindle cells, they have frequently been interpreted as pseudosarcoma (Lane, 1957), carcinosarcoma (Frank *et al.*, 1940) or spindle cell carcinoma (Lichtiger *et al.*, 1970). However, recent studies suggest that most of these neoplasms are squamous cell carcinomas and the "sarcomatous" component is a reactive proliferation of the connective tissue cells, apparently in response to the squamous carcinoma.

This paper reports one such case because of its unusual histological appearance.

Case report

K.L.K., a 63-year-old Chinese male was admitted to the General Hospital, Kuala Lumpur, on February 7th, 1977. For a period of 6 months prior to his admission he had been complaining of progressive hoarseness of voice accompanied by copious expectoration and loss of weight. Examination of his ear, nose, and throat showed them to be essentially normal. There were no palpable lymph nodes.

Physical examination disclosed a fleshy granular looking mass arising from the whole of the left vocal cord and extending to involve the anterior commissure and the anterior one-third of the right vocal cord. The left vocal cord was fixed.

A diagnostic biopsy of the left vocal cord lesion was taken and sent to the Pathologist of the Hospital who referred the histological slides Path. No. 509/77 as consultation problem to the Division of Pathology, Institute for Medical Research, Kuala Lumpur.

The slides showed four small fragmentary pieces of tissue, the largest measuring about 0.5 cm in its greatest dimension.

Microscopically, the fragments had a nodular configuration and a variable but distinct histological pattern. They were composed of a cellular stroma of spindle cells which were closely packed together. The cells had elongated dark nuclei some of which, were atypical and large and had prominent nucleoli. The degree of pleomorphism varied from mild to moderate and quite a number of the cells showed abnormal mitotic activity. The spindle shaped cells arranged themselves into fascicles that showed considerable interlacing. In a few areas the cellularity was reduced due to fibrosis and also seen were a few foci of inflammatory cell infiltration. The surface of one of the fragments was ulcerated and covered by necrotic granulation tissue.

The covering laryngeal mucosa included with three of the fragments had undergone neoplastic change and was unquestionably malignant and showed invasion of the sub-epithelial stroma in the

form of nests of squamous cells. The epithelial lesion was moderately well differentiated and there was an accompanying inflammatory cellular infiltration.



Fig. I – An invasive Squamous Cell Carcinoma across a portion of the surface of the tumour.

The remaining fragmentary bits were composed of blood, inflammatory exudate, granulation tissue, and a fragment of fibrous tissue containing groups of acini from the subepithelial mucus glands of the larynx.

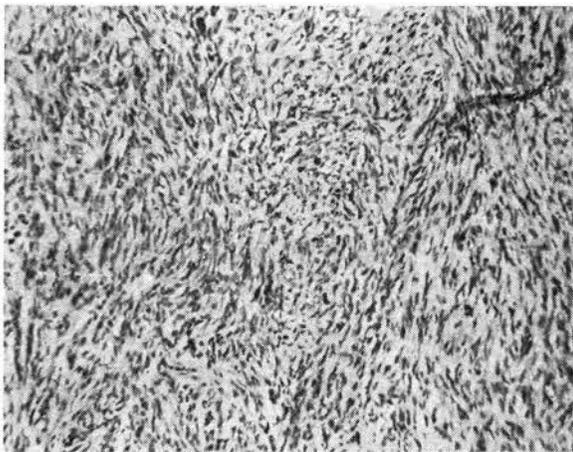


Fig. II – Stroma of biopsy specimen showing a spindle-cell sarcomatous appearance.

Further slides were prepared from the paraffin block and examined using Masson's trichrome, reticulin, and phosphotungstic acid stains. They revealed fibrous connective tissue within the stroma, distinction between the carcinomatous tissue and the surrounding stroma, and no cross-striations

respectively, all confirming the impressions gained from sections stained with haematoxylin and eosin.

Apart from this small biopsy, no further pathological material was available so that it is not possible to comment on the subsequent behaviour of this growth.

Comments

Lane, (1957) first proposed the term "pseudosarcoma" to refer to presumably non-neoplastic connective tissue mass with histological appearance suggestive of sarcoma. He reviewed 10 cases of polypoid and fungating growths of the oral, facial, and laryngeal sites and regarded the sarcoma-like stroma as a secondary reactive phenomenon and probably non-neoplastic. The pathological study including the clinical course of these cases suggested that only the carcinomatous portion had truly malignant neoplastic properties.

Other reports of this condition supporting Lane's concept of non-cancerous basis of this bizarre stromal proliferation include those of Appleman and Oberman (1965), Lichtiger *et al.*, (1970) and Goellnier and associates (1973).

Appleman and Oberman described 11 cases of laryngeal neoplasm which microscopically manifested sarcoma-like areas with squamous cell carcinoma. They regarded the stromal component as infiltrative spindle squamous cell carcinoma although in some tumours they considered it as an atypical response to the invasive carcinoma.

Lichtiger *et al.*, (1970) studied 13 cases of spindle cell tumours of the upper respiratory tract, oral cavity and skin of face. Using light and electron microscopy, they reported that no evidence could be found to support the concept of malignant connective tissue component and regarded this group of tumours as spindle cell variants of squamous cell carcinoma.

Goellnier and associates (1973) described their results of 25 patients with pseudosarcoma and associated squamous cell carcinoma. Electron microscopic features of their cases including enzymic histochemistry on one of these suggested that the sarcoma-like stroma was a reactive proliferation of histiocytes and fibroblasts presumably in response to the carcinomatous tissue.

The reason as to why this type of laryngeal carcinoma should develop such a peculiar mesenchymal reaction is not clear but the pathogenesis has been linked with irradiation, traumatic stimulus, reparative process, scarring, and an atypical response to the associated squamous carcinoma.

Because of this unusual histological appearance of these tumours they pose a difficult interpretive problem. Unless the existence of such pseudo-carcinomatous tissue in association with a squamous carcinoma in these anatomical locations is known, they are likely to be misdiagnosed as sarcomas. It is particular so, if the malignant epithelial component is scanty. Hence a biopsy from this part of the body, with sarcoma-like appearance should be interpreted with caution and careful search be made by further sectioning including additional biopsies in order to find the associated squamous carcinoma.

Significant factors related to its diagnosis are:-

- (a) they are usually found in elderly males of the age group similar to that noted in routine carcinoma of the larynx.
- (b) the larynx is often the site of this growth in the upper respiratory tract.
- (c) most of these growths arise in the vocal cord and enlarge slowly.
- (d) the lesion varies from discrete polypoid to diffuse infiltrative type.
- (e) microscopically, the growth shows a cellular and pleomorphic stroma which may manifest areas of osteoid and cartilaginous metaplasia.
- (f) there is a co-existing squamous cell carcinoma which may be inconspicuous.
- (g) rarely does the stroma metastasize with the carcinoma.

With its distinctive clinical and pathological features the prognosis of these neoplasms depends upon the configuration of the growth. The polypoid types, being more amenable to total removal have a favourable clinical course while the infiltrative growths behave similarly to those of poorly differentiated squamous cell carcinoma.

Summary

A case of squamous cell carcinoma of the larynx with a sarcoma-like stroma is reported. Because of its unusual histological appearance it can be erroneously diagnosed as a sarcoma. The significant factors related to its diagnosis are mentioned.

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References

1. Anderson, W.A.D., (1961) *Pathology*, Ed. 4, 701.
2. Appleman, D.H. and Oberman, A.H., (1965) Squamous cell carcinoma of the larynx with sarcomatous stroma, *Am. J. Clin. Pathol.*, **44**, 135-145.
3. Frank, I. and Lev, M., (1940) Carcinosarcoma of the larynx, *Ann Otol Rhinol Laryngol*, **49**, 113-129.
4. Goellnier, J.R., Devine, K.D., Weiland, L.H., (1973) Pseudosarcoma of the larynx, *Am J. Clin. Pathol.*, **59**, 312-326.
5. Lane, N., (1957) Pseudosarcoma (Polypoid sarcoma-like masses) associated with squamous cell carcinoma of the mouth, fauces, and larynx, *Cancer*, **10**, 19-41.
6. Lichtiger, B., Mackay, B., Tessler, C.P., (1970) Spindle cell variant of squamous cell carcinoma: a light and electron microscopic study of 13 cases, *Cancer*, **26**, 1311-1320.