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Case Report

A Common Tumour in an Uncommon Site: Utility of Special Stains in the Era of Immunohistochemistry

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Abstract: Leiomyomas are benign smooth muscle tumours that arise at a wide variety of locations. Most of them appear to originate from their normal tissue counterpart. Primary bronchial leiomyomas are rare. Here we present a case of primary bronchial leiomyoma diagnosed using Haematoxylin & Eosin (H&E) and confirmed by Masson's trichrome and Smooth Muscle Actin (SMA). We have come to a conclusion that expensive immunohistochemistry markers donot confer any added advantage in diagnosing benign smooth muscle neoplasms.
Keywords: Massons trichrome, smooth muscle actin, leiomyoma, endobronchial.

INTRODUCTION

Benign neoplasms of the trachea and bronchi constitute less than 10% of tumours. Primary pulmonary leiomyomas are extremely uncommon both in children and adults that constitutes approximately 2% of benign lung tumours. Majority of pulmonary leiomyoma are located in the lung parenchyma (51%). Tracheal and bronchial leiomyoma constitute around 16% and 33% [1]. Primary endobronchial leiomyoma is a very rare presentation, literature on which is scarce [2]. Leiomyomas are benign smooth muscle neoplasms with characteristic growth pattern which are easily diagnosed by H&E and confirmed by Masson's trichrome stain, thus avoiding expensive immunohistochemistry. Masson's Trichrome is a three-colour stain. On staining tissues, it gives keratin and muscle fibers- red colour, collagen and bone- blue or green and dark brown to black nuclei [7]. Here we present a case of primary endobronchial leiomyoma, diagnosed using H&E and confirmed by Masson's Trichrome and SMA, both of which showed consistent results.

CASE REPORT

A 65 year old diabetic lady was admitted to Amala institute of medical Sciences, Thrissur, on July1 ,2014, with complaints of fever, cough, shortness of breath for the past 1 week. She had recurrent episodes of pneumonia for the last 6 months. She did not give any history of haemoptysis, weight loss or sputum production.

General and physical examination were normal except for localized wheeze in chest. Her laboratory studies were also normal. The patients posterolateral and anteroposterior chest radiograph showed right hilar mass with paratracheal widening, volume loss in right upper lobe, segmental collapse and consolidation. Pulmonary function tests revealed PEFR of 130L/min. Chest CT images showed lobulated soft tissue mass protruding from right upper lobe projecting into right middle bronchus. Provisional diagnosis of carcinoid or malignancy was considered. Flexible bronchoscopy showed an ovoid growth in right upper lobe bronchus bulging into right main bronchus. Bronchial brush, wash and biopsy were taken. Histopathologic examination (HPE) of the biopsy revealed a lesion composed of spindle shaped cells arranged in sheaves in a collagenous stroma covered by intact respiratory epithelium. The diagnosis suggested was leiomyoma.

We received a sleeve resection specimen of tumour. HPE revealed a nodular lesion arising from the smooth muscle layer of the bronchus and showed a similar histology as in biopsy (Fig. 1A-B). Masson's Trichrome and SMA were done to complete the diagnostic work up (Fig. 2A-B). Postoperative period was uneventful. The patient was discharged after 1 week. Follow up after 1month and 6months revealed no recurrence of symptoms.

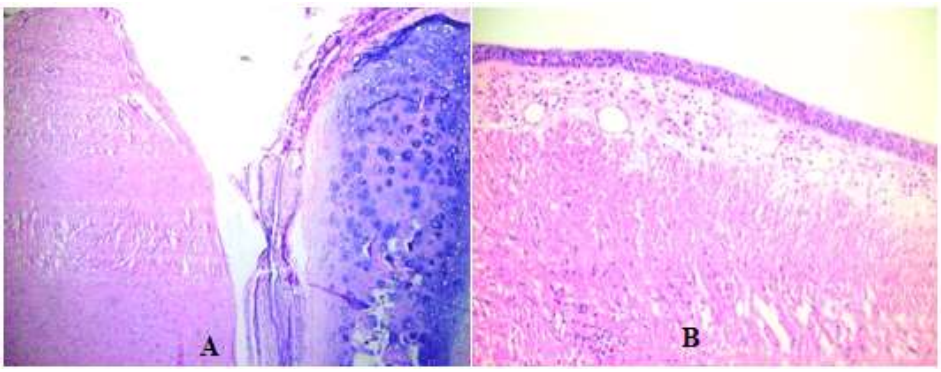

Fig. 1A: Endobronchial leiomyoma (H&E, x40X); B: Alternating fascicle pattern of growth of smooth muscle bundles (H&E, x100X)

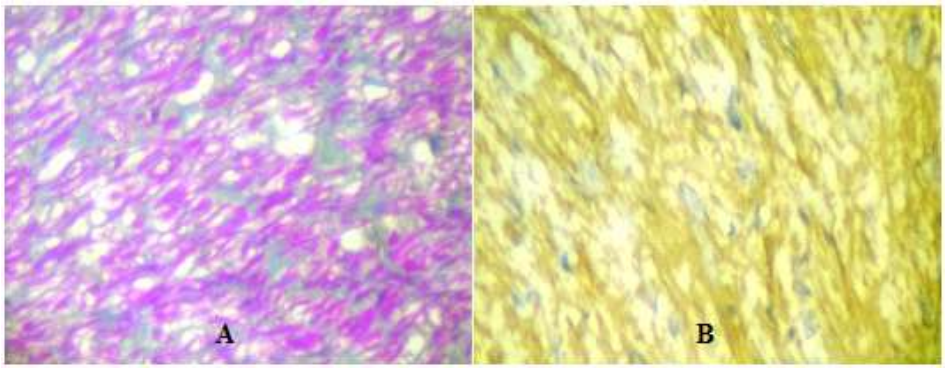

Fig. 2A: Masson's trichome stain, red pink muscle fibres and blue green collagen fibres (MT, x 400X); B: Tumour cells positive for SMA, (SMA, x 400X)

DISCUSSION

Leiomyoma is a benign smooth muscle neoplasm. They occur in soft tissue, small bowel, esophagus, uterine myometrium and latter being the commonest.

Leiomyoma is a rare benign tumour of bronchial tree. Forkel *et al*., reported the first case in 1909 [3]. They account for 33-45% of all pulmonary leiomyoma [4, 5] and are usually found in young and middle aged individuals [6].

Leiomyomas are easily recognized because of the convergence of two main features: (a) spindle cell lesion with cells having elongated tapering eosinophilic cytoplasm (b) an elongated blunt ended nucleus (H&E). Nuclear chromatin tend to be finely stippled. Characteristic pattern of growth named as alternating fascicle pattern, in which long directional fascicles of smooth muscle cells intersect at right angles producing circular silhouttes when viewed against the plane of the section [6].

Masson's Trichrome uses a three-colour staining protocol in histology and is best suited for distinguishing cells from surrounding connective tissue. It gives red for keratin and muscle fibers, blue green for collagen and bone and dark brown to black for nuclei [7]. Tumour cells showed positivity for SMA. In our case Masson's Trichrome as well as SMA gave consistent and good staining results on different occassions.

The tumour did not show any increase in cellularity, bizarrity of nuclei, tumour cell necrosis, or increase in mitotic activity, all of which suggests a malignant change. Another important variant is benign pleomorphic leiomyoma which show a focal collection of bizarre nuclei, without any increase in mitotic activity. In situations like these, a MIB index is highly recommended to rule out a malignant transformation [6].

CONCLUSION

Benign smooth muscle tumours arise at a wide variety of locations and most cases appear to originate from their normal tissue counterpart. Bronchial leiomyoma are rare benign tumours. They can be diagnosed on routine H&E stain and confirmed by Masson's Trichrome. Special stains like Masson's Trichrome when used will give consistent staining results. More expensive IHC markers do not confer any diagnostic advantage.

In general, H&E morphology, supplemented where relevant by ancillary studies, remains the corner stone for histopathological diagnosis of soft tissue tumours [6]. The cost saving obtained by not using more expensive methods like IHC will be especially advantageous in a developing country like India.

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