

Pulmonary benign metastasizing leiomyoma in patient with esophageal and anorectal leiomyomatosis

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ABSTRACT

Esophageal and anorectal leiomyomatosis association is exceedingly rare. It's characterized by a benign smooth muscle cell proliferation in respectively esophageal and anorectal walls, causing circumferential thickening. To the best of our knowledge, this is the first reported pulmonary BML case associated with esophageal and anorectal leiomyomatosis in a 20-year-old female.

Keywords: leiomyoma, esophagus, anorectal, lung, nodules

INTRODUCTION

Esophageal and anorectal leiomyomatosis association is exceedingly rare. It's characterized by a benign smooth muscle cell proliferation in respectively esophageal and anorectal walls [1–3]. Benign metastasizing leiomyoma (BML) is a rare condition targets most commonly the uterus as the primary site and the lungs as secondary metastatic site [4,5]. Associated pulmonary BML with esophageal and anorectal leiomyomatosis has never been reported.

Typically, pulmonary BML is coincidentally discovered on imaging, since patients are usually asymptomatic. The most frequent radiographic feature consists in several solid nodules with unchanged size over long periods. Cystic dystrophy can exceptionally induce pneumothorax [6–8].

PATIENT AND OBSERVATION

A 20-year-old female was referred to our gastroenterology department for persistent chronic con-

stipation, which was aggravated, becoming resistant to medical treatment. She had an 8-year medical history of achalasia that was partially improved with pneumatic dilations sessions, allowing her to tolerate a normal diet. However, she always complained of solid and liquid dysphagia, with episodes of regurgitations.

Physical examination revealed abdominal tenderness, thickened anal canal with conserved sphincter strength and fecaloma.

Thoraco-abdominal and pelvic CT scan was performed. It showed a circumferential thickening and a smooth eccentric bulge of the lower two thirds of the esophageal wall with a proximally dilated esophagus. Periesophageal fat was preserved (Figure 1).

Thoracic section disclosed a left pneumothorax with two well-defined solid nodules in the left lower lobe. A third nodule was partially cystic, probably causing pneumothorax (Figure 2). Abdominal and pelvic sections revealed a thickened anorectal wall with a proximally dilated colon and stercoral stasis (Figure 3). There were no uterine nodules.

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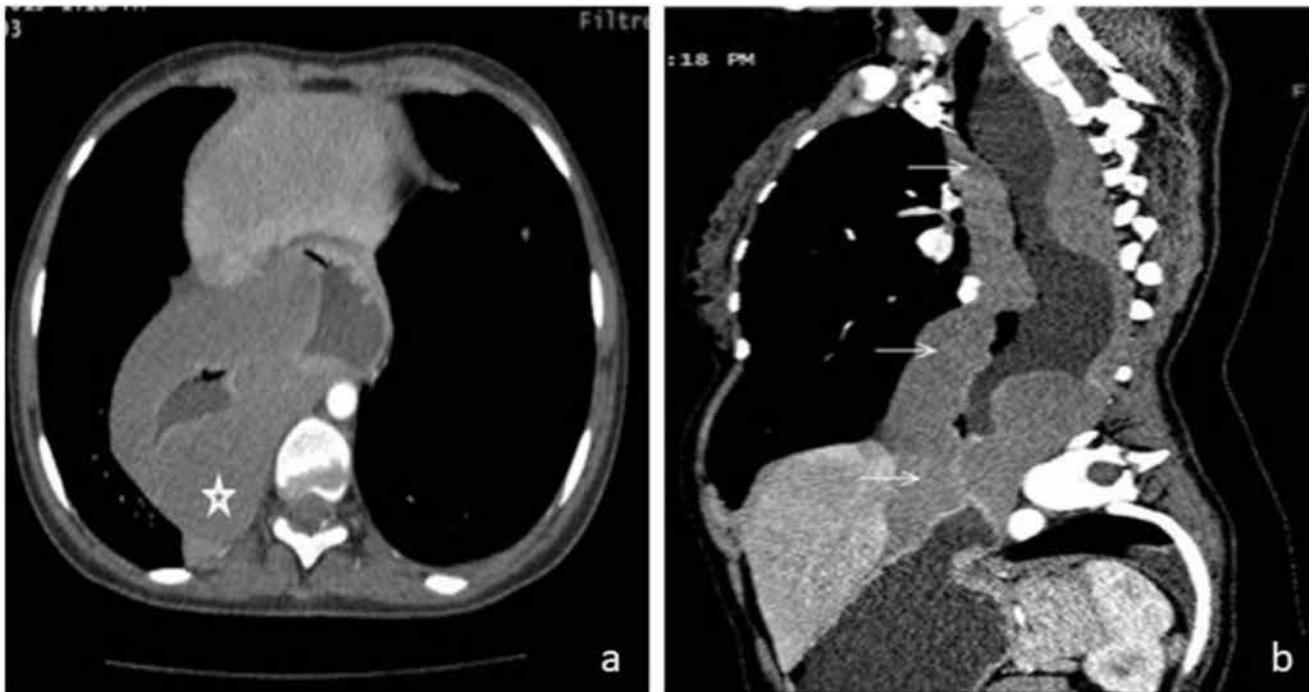


FIGURE 1. Thoraco-abdominal CT: Circumferential thickening of the lower two thirds of the oesophageal wall (asterisk and arrows) (a): axial view (b): curved planar reformat in the esophagus axis



FIGURE 2. Thoracic CT scan: Pneumothorax and liquid content partially cystic nodule in the left lower lobe



FIGURE 3. Pelvic CT scan: Regular thickening of the anorectal wall (arrows). Note the upstream dilated rectum with stercoral stasis

Upper endoscopy revealed a dilated esophagus with food residues, an increased resistance at the gastro-esophageal junction and an ulcerated mucosa secondary to stasis. Multiple esophagus and gastric biopsies showed an inflammatory aspect.

The patient underwent cystic nodule diagnostic resection. Pathological examination showed regular spindle cells, arranged in intersecting fascicles in the inter-alveolar and peri-bronchiolar walls (Figure 4). Mitotic index was low, nuclear atypia was absent and tumor did not invade pulmonary surrounding tissue that was dystrophic.

Tumor cells were stained with smooth muscle markers (α -smooth muscle actin, desmin and h-caldesmon). Estrogen and progesteron receptors were negative. Diagnosis of pulmonary BML was made based on staining results.

Rectal manometry showed normal external and internal anal sphincter strength.

Recto-anal inhibitory reflex was present only for a high threshold and rectal compliance was increased. Over view at low magnification of a deep rectal biopsy showed a spherical, hypertrophic and diffusely nodular muscularispropria (Fig 5). Histo-

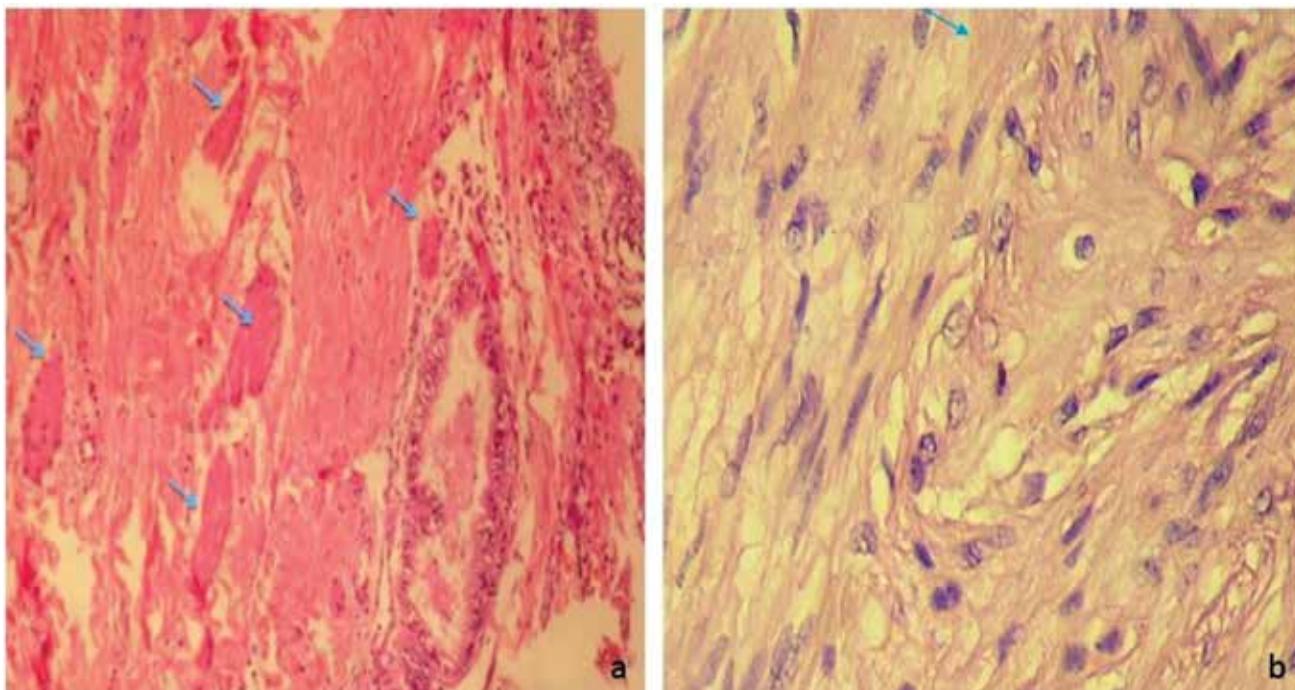


FIGURE 4. Histology of a left lobe nodule (a): Intersecting fascicles (arrow) of smooth muscle cells in the peribronchial wall (b): Spindled tumour cells with regular cigar-shaped nuclei (arrow) (Haematoxylin and eosin stain; original magnification x 200 and x 400 respectively).

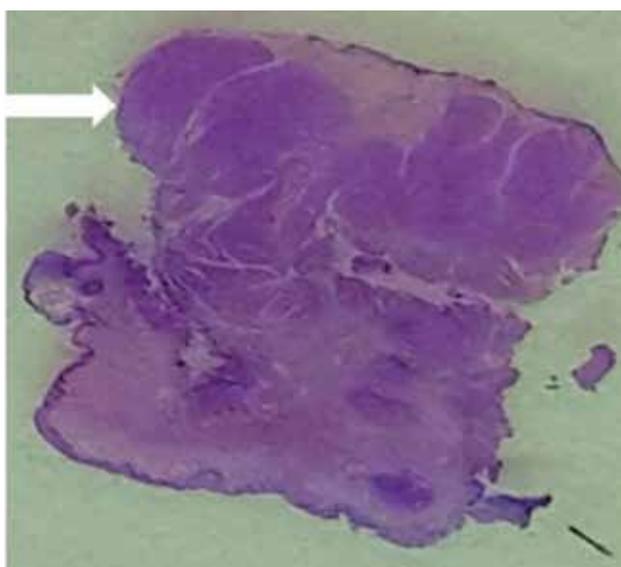


FIGURE 5. Deep rectal biopsy: Spherical, hypertrophic and diffusely nodular muscularispropria (arrow) (Over view HE stain x 25)

logical examination confirmed the smooth muscle cells proliferation arranged in intersecting fascicles, without atypia or tissue invasion. This aspect is comparable to that observed in the pulmonary nodule.

Diagnosis of esophageal and anorectal leiomyomatosis complicated by pseudoachalasia and benign pulmonary metastasis with secondary pneumothorax was performed. There was no other organs damage, neither features of an associated Alport's syndrome, namely no nephropathy, nor oculo- pathology or deafness.

Regarding the patient's care, a multidisciplinary consultation was carried, involving gastroenterologists, pulmonologists, visceral and cardiothoracic surgeons. As a first step, the patient is scheduled for esophagectomy with gastric tube reconstruction associated to colostomy. Subsequently, combined abdominoperineal resection of the rectum will be programmed depending on the patient condition. For the residual lung nodules, there will be no hormonal suppression therapy as receptors were negative.

Clinical and radiological monitoring will be done every 3 and 6 months respectively. Given the number and the complexity of the surgical procedures proposed, the patient refused any treatment and she was lost to follow-up.

DISCUSSION

We have described the first case of pulmonary BML associated with esophageal and ano-rectal leiomyomatosis joined with pneumothorax and misdiagnosis pseudo-achalasia, without uterine leiomyomata. BML and leiomyomatosis, whatever their origin, are histologically characterized by an interlacing fascicles of uniform spindle cells without increased cellularity, nuclear pleomorphism or high mitotic activity. These cells can be stained using muscle markers (α -smooth muscle actin, muscle-specific actin, desmin and h-caldesmon) [2–9].

Esophageal leiomyomatosis is distinguished by an abnormal esophagus wall thickening, involving most often the inner circular layer (74%) and the distal two thirds portion with possible invasion of

the gastric fundus, with or without intramural nodules [3–10]. It should be differentiated from esophageal leiomyoma, which is a localized and encapsulated benign tumor developed as intramural lesion with mediastinal invasion when bulky [3].

Initial symptoms usually appear during childhood, as the case for our patient, and include dysphagia, postprandial vomiting and retrosternal pain [1].

Esophageal dilatation, consistent with pseudoachalasia, may lead to idiopathic achalasia misdiagnosis, which represent the main differential diagnosis, because of comparable clinical, radiologic and endoscopic anomalies. Stationary or high-resolution esophageal manometry may also show similar abnormalities, mainly the incomplete lower esophageal sphincter relaxation and the absence of peristalsis [11]. Endoscopy and gastro-esophageal barium radiography may suggest the former diagnosis, showing a long segment stricture, an important concentric esophageal wall thickening or a smooth eccentric bulge, favoring a submucosal lesion [12]. Furthermore, CT and magnetic resonance imaging are useful to distinguish pseudoachalasia from achalasia. Indeed, they show expansion of the esophageal wall thickening into the cardia, which is absent from achalasia and is considered to be a feature of esophageal leiomyomatosis [12]. In our case, the upper wall thickening does not extend to the cardia.

Endoscopic ultrasonography seems to be the most valuable tool for leiomyomatosis suspected cases because it pinpoints the layer from which the lesion arises [12]. Histological confirmation is impossible due to rare or superficial biopsies, because they do not show muscularis propria layer and the visible muscularis mucosa is only moderately thickened [11].

The muscular hypertrophy may be bulky, causing an anterior displacement and compression of the trachea and bronchi [3]. Treatment depends on clinical symptoms. When asymptomatic, follow-up is recommended, while esophagectomy is required when dysphagia is severe [12].

Regarding anorectal leiomyomatosis, this is an exceedingly rare condition. In the few reported cases, it occurred in patients that were previously diagnosed and treated for esophageal leiomyomatosis [1–3,9,10,13]. Therefore, anorectal leiomyomatosis should be suspected each time patients were treated for esophageal localization and had persistent constipation [1–3,10].

Diagnosis is difficult and need ancillary investigations such as pelvic magnetic resonance or CT scan [2]. The muscular hypertrophy probably disrupts myenteric rectal plexi and accounts for the lack of rectoanal inhibitory reflex [1].

Surgical treatment is often required because non-surgical procedures are not effective [2]. As for esophageal leiomyomatosis, an accurate preoperative diagnosis is mandatory for more effective treatment [3]. As for Azzie et al. reported cases, treatment consists of initial colostomy, followed by an abdominoperineal resection [2].

In most leiomyomatosis described cases, authors search for the presence of associated Alport's syndrome (hereditary disease with glomerular nephropathy, sensorineural deafness and ocular abnormalities), since both are highly associated [2,11]. Patients meeting the condition, have contiguous gene deletion involving both COL4A5 and COL4A6 genes [11].

BML is defined in most studies as the extra-uterine spread of a benign uterine process, after or without surgical procedures (myomectomy, hysterectomy or curettage) and occurring in premenopausal women. The most predominant site is the lungs, but in exceptional cases, BML may involve the heart, lymph nodes, and vertebral spine [5,14–16].

We stipulate that the BML occurrence without uterine leiomyoma in our case could be explained by two theories.

The first one advocates that BML would be secondary to a hematogenous spread of a microscopic leiomyoma, not detectable on imaging. As mentioned above, the majority of reported cases support this hypothesis.

The second hypothesis suggests that BML would be the result of a systemic leiomyomatosis due to multi-focal smooth muscle proliferations [15]. It is the most plausible hypothesis, given esophageal and anorectal leiomyomatosis in our case.

Rodriguez et al., reported the possible absence of uterine leiomyoma in BML pathogenesis. Moreover, authors state that BML could be diagnosed in men and children. In their study, they didn't give more explanations or bibliographic references supporting their claims [14].

Clinically, pulmonary localizations are mostly asymptomatic and incidentally diagnosed in chest imaging. In some cases, patients may complain of dyspnea, cough, chest pain or pneumothoraces (1%), as in our case [6,15,16]. Radiographic findings usually showcase well-defined, large or small nodules scattered throughout the lungs [8]. They can progress or endure cystic transformation, therefore causing recurrent pneumothoraces. A lung tumor with features similar to benign metastasizing leiomyoma, is the hamartoma. While this tumor is also a benign appearing smooth muscle neoplasm with no atypia and mitotic count, it is often solitary and occurs outside a context of leiomyomatosis.

BML care remains ambiguous [17]. The surgical resection has been described as well as close moni-

toring, with or without hormonal suppression for residual pulmonary nodules [18,19]. When associated with digestive leiomyomatosis, treatment regimen of BML has to be established, but it is obvious that therapy plans require a multidisciplinary approach, involving mainly visceral and cardiothoracic surgeries. In our case, esophageal and anorectal leiomyomatosis treatment was a priority because of the functional complications, unlike the pulmonary nodules that will be monitored, especially after cystic nodule resection, which caused pneumothorax.

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CONCLUSION

Esophageal and anorectal leiomyomatosis association is exceedingly rare. Its coexistence with a pulmonary BML is possible and should be considered in women who had pulmonary lung nodules or cysts, even without uterine leiomyomata history.

Diffuse leiomyomatosis requires an accurate pre-operative diagnosis and a multidisciplinary treatment approach.