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Acute respiratory distress due to a bronchogenic cyst submitted to percutaneous drainage followed by thoracoscopic resection



Dear Editor,

A clinical case of severe respiratory distress due to a mediastinal bronchogenic cyst (BC) that was managed exclusively by a minimally invasive approach is here presented.

Case report

A 2-year-old boy was referred to the pediatric intensive care unit in acute respiratory distress. He was febrile and presented tachypnea, dyspnea, stridor, global chest retraction and hypoxia. Over the previous 25 days, he had been admitted twice due to cough, wheeze and mild respiratory distress with poor response to medical treatment. Thoracic computed tomography scan revealed a well-circumscribed, bilobed cyst (48 × 46 × 30 mm) in the superior and posterior mediastinum, causing displacement of the supra-aortic vessels, and compressing the esophagus and the trachea; there was a cervical extension, contiguous to the left thyroid lobe and common carotid artery (Fig. 1A, B).

Due to the severe respiratory distress, in an attempt to stabilize the patient condition and improve ventilation, a decision was made to perform percutaneous cyst drainage.

Under ultrasound and fluoroscopic guidance, an 8Fr pig-tail catheter was inserted into the cyst with aspiration of 40cc of fluid, which resulted in near complete collapse of the cyst and immediate clinical improvement (Fig. 1C). Elective thoracoscopic excision of the mass was then planned.

With the patient in modified right lateral decubitus, three 5 mm trocars were inserted. The cyst was identified posterior to the left subclavian artery (Fig. 2A–C); because of the intimate relation with the esophageal wall, an intra-operative upper endoscopy was performed to assist the dissection. The cystic mass was then removed *en bloc*, the resulting muscle defect of esophageal wall being closed with interrupted absorbable sutures; a thoracic tube was left in place through one port.

The postoperative course was uneventful. After removal of the thoracic tube, the child was discharged home on postoperative day 1. Histological examination revealed a uniloculated cyst lined by respiratory type epithelium with underlying fascicles of smooth muscle, respiratory-type mucous glands and cartilage, consistent with a bronchogenic cyst.

At 2-year follow-up, the child is doing well with no digestive or respiratory symptoms; the scars are almost imperceptible.

Comment

Foregut cystic malformations are rare congenital entities. Bronchogenic cysts (BC) in the mediastinum form early in fetal development from abnormal buds of tracheobronchial tree. Most of them are asymptomatic in the early stages, thus they are rare in infancy and often recognized in young adults. In fact, most diagnoses occur when the BC become infected or grow large enough to compress adjacent organs.^{1,2}

The treatment of asymptomatic BC is not consensual. In adults, conservative management under close long-term follow-up is an option.³ In children, both symptomatic and asymptomatic cysts should be surgically excised because of risk of enlargement/compression (due to secreting mucosa

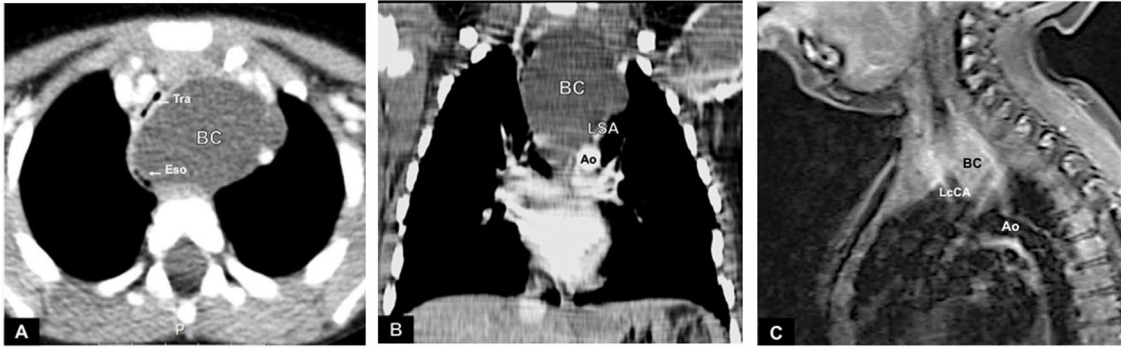


Figure 1 (A, B) Computed tomography scan before drainage; (C) magnetic resonance imaging after drainage. Ao—aortic arch; BC—bronchogenic cyst; Eso—esophagus; LcCA—left common carotid artery; LSA—left subclavian artery; Tra—trachea.

or infection), erosion/perforation, bleeding, and malignant degeneration. As these lesions do not regress, it is probably more appropriate to resect asymptomatic BC not only in children but also in the young and in the healthy adult in order to prevent life threatening complications such as the present case illustrates.^{2,3}

Drainage of symptomatic BC is a minimally invasive procedure when performed by percutaneous access under ultrasound guidance or by endobronchial ultrasound-guided fine needle aspiration (EBUS-FNA).^{1,4-6} The latter has been used mainly for diagnostic purpose, but several experts have applied it successfully to BC drainage^{1,6}; unfortunately, there is no bronchoscopy with EBUS-FNA available for young children. Drainage can be used in patients who are non-surgical candidates, but it is a less than optimal definitive treatment because the risk of infection or cyst recurrence remains. In addition to the rapid resolution of respiratory distress, the drainage should be viewed as a first step to facilitate the subsequent cyst excision due to the reduction of size and inflammation.⁵

Surgical excision of mediastinal BC is demanding because of vicinity and possible adhesions to surrounding vital organs, with potentially life threatening complications.^{5,7} In addition, some patients do not tolerate thoracoscopy well, thus thoracotomy is the procedure usually performed.⁵ Video-assisted thoracoscopic surgery (VATS) has been increasingly used to excise BC and is the preferred “minimally invasive technique” for most thoracic surgeons.^{1,5} However, a purely thoracoscopic procedure (not VATS) is even less invasive, with a more rapid recovery and better cosmesis. As the present case illustrates, it is viable despite the tight space available, particularly for suturing, a more pronounced issue in young children. So, if the patient can tolerate a “purely” thoracoscopic procedure, it should be endeavored.

In summary, this unique report demonstrates the feasibility of strict minimally invasive techniques to decompress and to excise a BC, which were crucial for the excellent outcome.

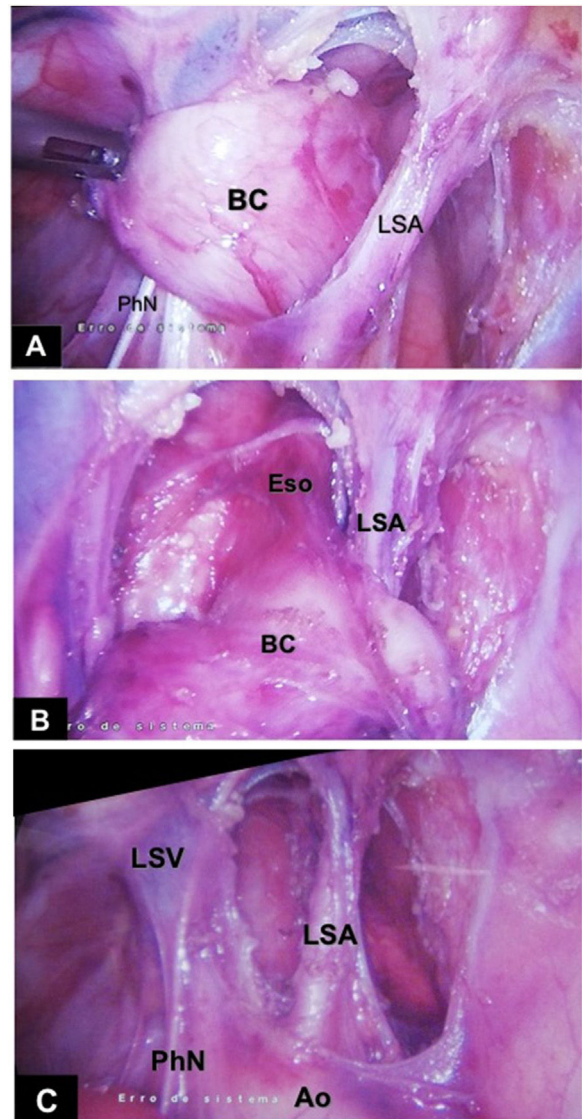


Figure 2 (A-C): Intraoperative view. Ao—aortic arch; BC—bronchogenic cyst; Eso—esophagus; LSA—left subclavian artery; LSV—left subclavian vein; PhN—phrenic nerve.

Conflicts of interest

The authors have no conflicts of interest to declare.

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Assessment of compliance with the smoking ban in children's playgrounds in Portugal: a case study



The smoking behavior of friends, peers and family members is an important predictor of tobacco use by adolescents.¹ Concomitantly, it is widely acknowledged that tobacco consumption by parents is a risk factor for children's later smoking behavior. In Portugal, Law no. 63/2017 entered into force on January 1st 2018 and extended the smoking ban to outdoor locations attended by children (e.g., children's playgrounds).² This law is relevant not only to protect children from secondhand smoke exposure, but also to decrease tobacco normalization. This study aimed to describe tobacco-related variables (e.g., persons smoking, smell of tobacco smoke, cigarette butts) in children's playgrounds before and after the implementation of this new Law, considering the socioeconomic status (SES) of the neighborhood surrounding the playground.

An observational study was developed in children's playgrounds in the municipality of Braga (Portugal), between May and June 2017 (before the law entered into force), followed by two follow-ups carried out in the same months in 2018 and 2019 (after the law entered into force). This study followed the methodology of the TackSHS Project Consortium, whose aims included the assessment of SHS exposure in children's playgrounds in European countries.^{3,4} A convenience sample of 20 playgrounds was assembled. Playgrounds were selected according to the neighborhoods' SES: 9 were located in the most deprived urban areas (low SES) and 11 located in the most affluent ones (high SES). Neighborhood SES was established based on a deprivation

index for Portugal.⁵ The number of playgrounds observed varied in each year due to temporary closures for maintenance. Playgrounds were observed in similar weather conditions and each playground was observed for a period of 30 min. The inclusion criterion was that a minimum of five people, including children, were inside the playground at the beginning of the observation, regardless of the time or day of the week. Most playgrounds were observed during weekends (41 out of 57) and in the afternoon (51 out of 57). On average each playground had a total of 9.77 (SD=5.60) people inside, of which 5.55 (SD=4.73) were children.

The researchers recorded the data on a grid developed based on the variables collected on the TackSHS project⁴: existence of persons smoking (cigarettes and e-cigarettes/heated tobacco products) inside and around the playground (<1 meter); presence of the smell of tobacco smoke; presence of non-smoking signs; and existence of cigarette butts on the floor inside and outside the playground.

The associations between tobacco-related variables and the year of the observations or the neighborhoods' SES were calculated using a Chi-squared test for the categorical variables (Fisher's Exact test when the expected count in cells was lower than five). The median differences were compared through a Kruskal–Wallis or Mann–Whitney Test, as appropriate. All analyses were performed with the IBM Statistical Package for the Social Sciences (SPSS) Statistics for Windows, version 26.0, Armonk, NY, USA.

The main results are presented in Table 1. There was a statistically significant decrease in the number of playgrounds with cigarette butts outside, reducing from 20 in 2017 to 15 in 2018 ($p=0.028$). However, in 2019 this number increased to 19 playgrounds. In 2017, almost all the play-