Authorisation for publishing clinical data was obtained from the patient. Nevertheless, personal data was anonymized.

Conflicts of interest

The authors have no conflicts of interest to declare.

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Airway stents in malignant central airway obstruction

Dear editor,

Central airway obstruction develops in a significant proportion of lung cancer patients and many other cancers through metastasis.[1] Tumors that cause obstruction of the trachea and the main bronchi are often inoperable.[2] Airway stenting is a therapeutic option for malignant central airway obstructions (MCAO) and is indicated for both intraluminal and extraluminal obstructions.[3,4] There are several types of stents available and there is a progressive and improved experience of professionals regarding their management.[3] Stenting is associated with immediate symptom relief and improved quality of life.[5] Palliative and therapeutic benefits are well established, however, complications related to several types of metal and silicone stents are also reported. We report 5 years' experience with stent placement in patients with MCAO, using rigid bronchoscopy (RB), between January 2015 and December 2019, at Centro Hospitalar Universitário São João.

Fifty-six stents were placed in patients with MCAO, 57.1% for lung cancer, regional extension by other malignancies including esophageal cancer (30.4%), head and neck (3.6%) and lung metastases (3 colorectal, 1 tongue sarcomaand 1 unknown primary). Baseline characteristics of the popula-

Table 1 Baseline characteristics.

	MCAO, n = 56
Age (years), mean ± SD	59.5 ± 12
Male sex, n (%)	45 (80.4)
Primary site of malignancy	
Local extension, n (%)	
Esophageal cancer, n (%)	17 (30.4)
Head and neck cancer, n (%)	2 (3.6)
Tracheal and lung, n (%)	32 (57.1)
Metastatic disease	
Colorectal cancer, n (%)	3 (5.4)
Tongue, n (%)	1 (1.8)
Occult, n (%)	1 (1.8)
Site of lesion	
Single lesion	
Trachea, n (%)	19 (33.9)
Right main bronchus, n (%)	5 (8.9)
Right bronchus intermedius, n (%)	3 (5.4)
Left main bronchus, n (%)	10 (17.9)
Extended lesion	
Trachea and ≥1 bronchus, n (%)	19 (33.9)
Type of obstruction	
Intraluminal lesion, n (%)	11 (19.6)
Extrinsic compression, n (%)	14 (25.0)
Mixed lesion, n (%)	31 (55.4)
Grade of obstruction (Myer and Cotton classification)[a]	
I, n (%)	2 (3.6)
II, n (%)	13 (23.2)
III, n (%)	39 (69.6)
IV, n (%)	2 (3.6)
Tracheoesophageal fistula, n (%)	10 (17.9)
Time interval from diagnosis of MCOA to stent inserted (days), median (IQR)	76.5 (382)
Adjuvant interventions	
None, n (%)	28 (50)
Mechanical debulking, n (%)	21 (37.5)
Mechanical dilatation, n (%)	6 (10.7)
Laser therapy, n (%)	13 (23.1)
Type of stent	
Silicon stent (Dumon), n (%)	28 (50)
Y stent, n	2
Metallic stent, n (%)	28 (50)
Y stent, n	10
Time until first complication (days), median (IQR)	39 (80)
No complications, n (%)	35 (62.5)
Complications found	
Mucostasis, n (%)	18 (32.1)
Granulation tissue, n (%)	9 (16.1)
Migration, n (%)	3 (5.4)
Halitosis, n (%)	4 (7.1)
Tumor in-growth, n (%), n (%)	15 (26.8)
Death, n (%)	52 (92.9%)
Survival (days), median (IQR)	68 (32—247)

Data are presented as frequency (n) and percentage (%) or median and interquartile range (IQR).
MACO: malignant central airways obstructions; SD: standard deviation.
[a] Classification based on the percentage of reduction in airway cross-sectional aera grade I ≤50% obstruction, grade II 51%–70% obstruction, grade III 71–99%, grade IV no detectable lumen.

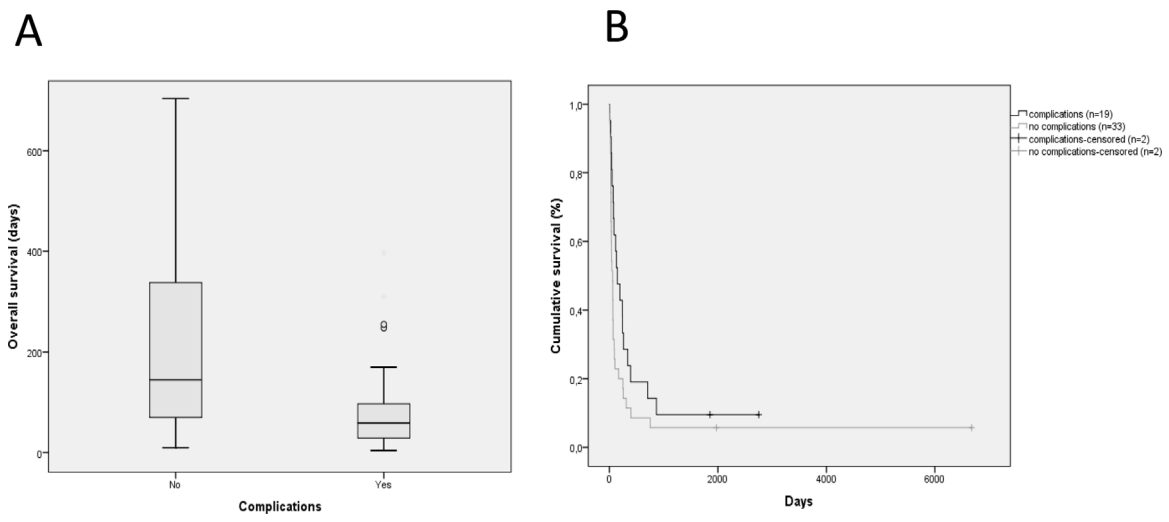

Figure 1 (A) Box plot demonstrating survival difference (days of survival) in MCAO patients with stent-related complications versus patients without complications. (B) Kaplan–Meier curve for overall survival after stent placement in relation to the occurrence of stent-related complications (black) and the absence of stent-related complications (gray): + indicates censoring cases.

tion and the characteristics of the obstruction observed by bronchoscopy are summarized in Table 1. Most patients had a single lesion, trachea (33.9%), right main bronchus (8.9%), bronchus intermedius (5.4%), left main bronchus (17.9%) and 33.9% of patients had an extended lesion. The severity of airway obstruction was determined using the Myer-Cotton grading system and forty-one patients (73.2%) had $\geq$ 71% airway lumen obstruction (Grade III or IV). In 10 cases tracheoesophageal fistula was detected.

An equal number of silicone (n = 28) and metallic (n = 28) stents were placed. In addition to stent insertion, in half of the cases, another bronchoscopy modality was performed, including mechanical dilation, tumor mechanical debulking and laser therapy.

Twenty-one (37.5%) of all stents placed were associated with $\geq$1 complication, such as mucostasis (in 12 patients, secretions were easily removable by flexible bronchoscopy while in 6 patients RB was needed), migration (n = 3), tumor in-growth (n = 15), granulation tissue (n = 9) and halitosis (n = 4) (Table 1). The median time until first complication was 39 (16–96) days.

The occurrence of complications was independent of the type of stent placed ($p = 0.78$), localization of obstruction ($p = 0.43$), type of obstruction ($p = 0.69$), origin of the malignancy ($p = 0.78$), tracheoesophageal fistula ($p=0.48$) and the extent of the obstruction ($p = 0.08$). However, there was a statistically significant difference between the number of complications and the presence of $\geq$71% airway lumen obstruction ($p < 0.05$) and in patients with a y-stent ($p < 0.05$).

Overall, the median survival was 68 (32—247) days. The Kaplan-Meier method was used to estimate the overall survival after stent placement in relation to the origin of the neoplasia (pulmonary vs non-pulmonary), type of obstruction and occurrence of complications. According to the analysis (Fig. 1), the median time until death was 145 (70–338) days for patients with stent-related complications and 59 (28–103) days for patients without complications, this difference was the only statistically significant one ($p < 0.05$).

Discussion

In patients with MCAO, bronchoscopic interventions can provide significant palliation of symptoms and quality of life.[5] We report the experience of our bronchology department in the placement of stents in cases with MCAO. Stent placement requires a careful selection of patients and the type of stent, as well as knowledge and experience regarding the technique, follow-up and management of complications. Although several types of stents are available, the ideal type of stent for each situation is still a matter of debate.[3] The main indications for stenting in MCAO are obstruction by extrinsic compression, endobronchial tumor with residual obstruction/malacia after bronchoscopic resection and malignant tracheoesophageal fistula.[2] Prior to stent placement, it is important that the obstructive lesion is dilated and removed to facilitate stent deployment and obtain the best possible benefit, which is maintaining long-term airway patency.[3]

Stent-related complications are not uncommon[3–5] and appear to be related to the median time of stenting.[6] Mucostasis, tumor in-growth and granulation tissue were the most common stent-related complications in our patients. The median survival found in our study was 68 days, which is close to that estimated in other series,[7,8] and the patients with longer survival after stent placement may be more likely to have $\geq$1 complication.

In conclusion, although this treatment potentially improves patients' symptoms and quality of life, we highlight the importance of regular and close monitoring to promptly diagnose complications in long cancer survivors.

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Literacy on tuberculosis in paediatric population and their caregivers. The importance of an outpatient tuberculosis centre

According to the most recent Tuberculosis Surveillance Report from the European Centre for Disease Prevention and Control, the prevalence of Tuberculosis (TB) has been steadily decreasing, from 21,3 per 100 000 inhabitants in 2014 to 20,5/100000 in 2018.[1] As a result, and also related to the centralization of health care, the general population and healthcare professionals have progressively less contact with TB, increasing misinformation about disease presentation, prevention and treatment, eventually compromising the timely detection and management of cases.[2] Raising awareness about the topic is therefore crucial as a strategy for disease control and public healthcare.[2]

The aim of this study was to assess the general population's knowledge about TB, by identifying, measuring and evaluating the differences between Outpatient Tuberculosis Centre users and Pediatric Hospital Department users, and highlighting the factors that lead to a better understanding of TB.

A comparative cross-sectional observational study was conducted from April to June 2019. Participants were divided into two groups: patients/caregivers admitted to a Pediatric Hospital Department (PHD) and patients/caregivers followed at an Outpatient Pediatric Tuberculosis Reference Centre (OTBC).

Participants filled in a questionnaire designed by the authors featuring fifteen multiple choice questions structured as: demographic information and general knowledge about TB, disease presentation/organ involvement and treatment/prevention. Questionnaires from children older than 10years-old or their caregivers were only included if completed in full.

A TB Knowledge Score (TB KScore) was obtained for intergroup comparison of results; each correct answer scored one point, with the final score ranging from 0 to 15 points. For multiple correct answers 0,1 was added or subtracted if right or wrong answer, respectively.

Data analyses was performed using IBM SPSS Statistics v.25®. General knowledge of TB was reported as absolute and relative frequencies; TB KScore was represented by mean and standard deviation; independent sample t tests were used for intergroup comparison. Multiple linear regression model was used to identify variables associated with TB KScore.

A total of 175 participants were included (Table 1), 50.9% ($n = 89$) from the PHD and 49.1% ($n = 86$) from the OTBC. 143 participants (81.7%) were female and the average age was 34.73 ± 13.07 years. Questionnaires were mostly answered by the mothers ($n = 122$; 69.1%), and the majority of participants ($n = 53$ (30.2%)) had a high school qualification. Fifty-nine percent ($n = 104$) of the caregivers were employed and the monthly family income was mainly between 500 € –1000 € ($n = 67$; 38.3%).

In the general knowledge section, 21.1% ($n = 37$) correctly recognized the incidence of TB, with 53.0% ($n = 93$) considering TB as a frequent disease and 23.0% ($n = 40$) as rare. One hundred and seven participants (61,1%) knew that TB is caused by a bacterium. About disease transmission, 23.4% ($n = 41$) answered correctly, with cough and breathing