tuberculosis between December 2018 and the date the questionnaire was completed. The treatment of 550 (54.6%) patients was affected by the shortages. One hundred patients (9.9%) had begun the intensive treatment phase with combination therapy, but could not complete it, and had to switch to individual drugs. In 286 patients (28.4%), the continuation phase of the treatment could not begin with combination therapy, and 248 (24.6%) individuals had to discontinue combination therapy after starting the continuation phase. In 61 patients (6.1%), treatment was interrupted (median 6 days, range 29, 1–30), until the switch to separate drugs was implemented. Seven patients received short periods of monotherapy.

Another part of the survey referred to the influence of the shortage of the rifampicin plus isoniazid combination, which is used in the treatment of tuberculosis infection (infected person without tuberculosis disease). Respondents reported 220 infected individuals who had experienced problems in carrying out their treatment: 77 (35%) failed to start the usual treatment of infection, 116 (53%) switched their initial treatment to an alternative treatment, 9 (4%) stopped treatment, and the problem was not specified in 18 patients (8%).

In their comments on drug shortages and their consequences, respondents mentioned particularly: the gravity of the situation, generally accompanied with the hope that it does not happen again; problems and confusion on the part of patients; the increase in the number of consultations in primary care and hospital clinics; the increase in the activity of both community and hospital pharmacies that are compelled to try to contact other pharmacies in Spain and abroad to try to procure the drugs; and the incredulity of the patients.

Fortunately, no problems occurred in any patient related with the shortage of intravenous rifampicin.

The survey may have limitations, in that it does not represent all patients treated for tuberculosis in Spain (based on the annual incidence of the disease and the period of time analyzed, it probably accounts for approximately 40–45% of the population). However, it does represent virtually all Spanish autonomous communities and a significant number of patients. Its strength is that it reflects the problems caused by the drug shortages, and the concerns expressed by SEPAR members that led this society to embark on negotiations with the health authorities and the pharmaceutical company responsible for the shortfall in production of the preparations in order to solve the problem, and to publish a press release.[7]

In conclusion, we believe that the shortage of fixed-dose combination anti-antituberculous drugs is a serious problem for healthcare and public health that must be prevented, and any repetition of these circumstances must be strenuously avoided in the future.

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José-María García-García,[a,*] Teresa Rodrigo Sanz,[a] Sarai Quirós Fernández,[b] David de la Rosa Carrillo[b]

[a] *Programa Integrado de Investigación en Tuberculosis (PII-TB) de SEPAR (Sociedad Española de Neumología y Cirugía Torácica), Barcelona, Spain*
[b] *Área de Tuberculosis e Infecciones Respiratorias (TIR) de la Sociedad Española de Neumología y Cirugía Torácica (SEPAR), Barcelona, Spain*

Corresponding author.
E-mail address: josemariagarcia@separ.es (J.-M. García-García).

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Bronchoscopies in neonatal intensive care units☆

Broncoscopias en unidades de cuidados intensivos neonatales

To the Editor:

The diagnostic and therapeutic utility of bronchoscopy, along with its minimal morbidity and mortality, have made it an increasingly useful technique in the neonatal intensive care unit (NICU). It permits direct dynamic inspection of the airway and facilitates the diagnosis and management of a wide variety of both supra- and infraglottic disorders.

We performed a retrospective descriptive study of 32 bronchoscopies performed in 23 NICU patients in a tertiary hospital over a 5-year period (2014–2018). We recorded patient characteristics, type of bronchoscope, anesthesia, reason for the examination, findings, and complications. A Pentax flexible 2.8 mm bronchoscope was used in all cases.

The average gestational age of the patients was 36 weeks (IQR 33–38) (50 % preterm infants), with a median weight of 2345 g

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Table 1
Patient characteristics.

Patient GA and sex	Postnatal age and weight	Underlying disease	Indication	Bronchoscopic findings	Complications	Number of procedures and days of monitoring	Reason for follow-up procedure. New findings
40 + 5 w, ♂	7 days 3,120 g	None	Stridor, respiratory difficulty	Laryngomalacia	No	1	–
29 + 4 w, ♀	60 days 3,600 g	Nemaline myopathy	Repeated atelectasis	Normal	No	1	–
31 + 2 w, ♀	67 days 2,600 g	Cri du chat syndrome	Upper airway obstruction	Bilateral vocal cord paralysis	No	1	–
33 + 1 w, ♂	3 days 1,850 g	Prematurity	Respiratory difficulty and difficulty in intubation	Subglottic stenosis and esophageal duplication	Mild desaturation	2 283 days	Persistent respiratory difficulty Tracheal stenosis
40 w, ♂	10 days 3,380 g	None	Biphasic stridor	Subglottic stenosis	No	2 17 days	Persistent stridor Findings without changes
36 w, ♂	10 days 2,570 g	Charge syndrome	Respiratory difficulty	Choanal stenosis	No	1	–
31 + 3 w, ♂	24 days 1,600 g	Prematurity	Respiratory difficulty	Pharynogmalacia	Mild desaturation	1	–
39 w, ♀	7 days 3,000 g	Apneas	Apneas and respiratory difficulty	Tracheomalacia	Severe desaturation	1	–
41 w, ♀	39 days 3,200 g	None	Respiratory difficulty, extubation failure	Laryngeal stenosis	No	2 90 days	Follow-up of laryngomalacia
33 w, ♂	16 days 2,300 g	Prematurity	Choking, respiratory difficulty	Tracheomalacia	Severe desaturation	2 25 days	Follow-up No new findings
40 w, ♀	8 days 3,000 g	DiGeorge syndrome	Stridor and hoarseness	Laryngomalacia, choanal stenosis	No	1	–
34 w, ♂	8 days 2,055 g	TEF	Stridor, complete study	TEF	No	2 48 days	Persistent stridor Bronchial stenosis
33 w, ♂	42 days 2,600 g	TEF	Stridor, complete study	TEF	Severe desaturation	2 69 days	Follow-up. No new findings
38 w, ♀	7 days 2,600 g	TEF and Shone syndrome	Complete study	TEF and choanal stenosis	Severe desaturation	2 10 days	Selective intubation. Bronchial stenosis
33 w, ♀	75 days 2,950 g	Prematurity	Hoarseness and stridor	Normal	No	1	–
35 + 2 w, ♀	1 day 2,190 g	TEF	Stridor, complete study	TEF and tracheomalacia	No	1	–
38 + 1 w, ♂	48 days 3,190 g	TEF	Extubation failure	TEF and tracheomalacia	No	3 89 and 97 days.	Follow-up. No new findings
37 + 1 w, ♂	2 days 2,490 g	TEF	Complete study	TEF	No	1	–
26 + 1 w, ♀	240 days 5,490 g	Prematurity, hyper-IgE syndrome	Stridor, respiratory difficulty	Subglottic stenosis, tracheomalacia	Mild desaturation	1	–
37 + 1 w, ♂	47 days 2,760 g	Hypoxic-ischemic syndrome	Stridor	Laryngopharyngomalacia	No	1	–
37 + 4 w, ♀	41 days 2,285 g	Corpus callosum agenesis, heart disease	Repeated atelectasis	Mucous plugs	Severe desaturation	1	–
37 + 6 w, ♀	23 days 3,000 g	Myelomeningocele, unilateral coloboma	Upper airway obstruction	Pharyngolaryngomalacia	Mild desaturation	1	–
35 w, ♀	60 days 2900 g	Hypotonia	Hypoventilation	Tracheal bronchus and tracheomalacia	No	1	–

GA: gestational age; TEF: tracheoesophageal fistula.

(1,900-2,800), 11 boys and 12 girls. Underlying diseases included 6 cases of esophageal atresia.

The procedure was performed by a pediatric pulmonologist in infants with an average age of 32 days (8–65) and an average weight of 2900 g (2,570-3,290) admitted to the neonatal unit. Patient care was the responsibility of the neonatologist. All procedures were performed under sedation, primarily ketamine. Respiratory support was used during the procedure, as follows: high flow nasal prongs in 9 (28.1 %), mechanical ventilation in 9 (28.1 %), CPAP in 5 (15.6 %), standard nasal prongs in 2 (6.3 %), laryngeal mask in 1 (3.1 %), and no support in 6 (18.8 %).

The indications (Table 1) that led to the realization of the procedure were: tracheoesophageal fistula (8), stridor (7), respiratory difficulty (3), difficulty to intubate (4), failure to extubate (3), atelectasis (2), upper airway obstruction (2), hypoventilation (1), and selective intubation (1).

Of the total bronchoscopies, 23/32 (69 %) were diagnostic; of these, 21/23 (91 %) revealed pathology and more than one abnormality was found during the examination in 10/23 (43 %). Nine bronchoscopies (9/32) were performed to monitor progress. In 4 of these, no new findings were revealed. It is interesting to note that in 1 of the control bronchoscopies, selective intubation could be performed in a patient with recurrent pneumothorax.

The most frequent bronchoscopic diagnoses were malacia and stenosis at different levels. Findings are summarized in Table 1.

During the procedure, 5 patients had transient hypoxemia that required the temporary withdrawal of the bronchoscope, although the examination of the airway could be completed in all patients. There were no significant differences in complications between preterm and term infants.

Fiberoptic bronchoscopy is a technique increasingly used in the NICU for its high diagnostic yield and safety record.[1]

Patients admitted to these units often have episodes of respiratory difficulty, repeated atelectasis, or intubation or extubation problems.[1,2] In all these processes, bronchoscopy may be required, or at least advisable.[3] Moreover, direct visualization of the airway is essential for the diagnosis of possible malformations. This technique is usually performed under sedation, permitting dynamic airway examination. The indications for the procedure tend to be: stridor, atelectasis, respiratory distress, or difficulty in intubation.[4] The most common bronchoscopic findings are mucous plugs, stenosis, and malacia at different levels.[1,5]

A high percentage of procedures reveal multiple diagnoses, so a full exploration of the upper and lower airway in each procedure is essential. In the case of suspected pneumonia or unilateral lung disease, bronchoalveolar lavage can also be performed during the procedure,[6] which can be useful both for designing antibiotic regimens and for diagnosing certain uncommon but not unknown diseases, such as altered surfactant synthesis.

The most common complications are bradycardias and mild hypoxia.[1] However, some authors believe that these situations are inherent to the procedure itself and cannot be considered complications,[7] since the vast majority are transitory and resolve after temporary withdrawal of the bronchoscope. The procedure is usually conducted in neonatal units with continuous monitoring and under the supervision of the neonatologist.

We can, then, conclude that bronchoscopy is a very useful technique in the NICU and one that offers a high safety profile in expert hands.

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María del Carmen López Castillo,[a,*] Estela Pérez Ruiz,[b] Pilar Caro Aguilera,[b] Enrique Salguero García,[a,c] Javier Pérez Frías[b,d]

[a] *Unidad de Gestión Clínica de Neonatología, Hospital Regional Universitario de Málaga, Málaga, Spain*
[b] *Sección de Neumología Pediátrica, Hospital Regional Universitario de Málaga, Málaga, Spain*
[c] *Servicio de Neonatología, Hospital Regional Universitario de Málaga, Málaga, Spain*
[d] *Facultad de Medicina de Málaga, Málaga, Spain*

Corresponding author.
E-mail address: mcarmen.lopez123@gmail.com (M.d.C.L. Castillo).

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Iatrogenic Caushing syndrome caused by inhaled corticosteroids in an HIV+ patient☆

Cushing iatrógeno secundario al uso de corticoides inhalados en paciente VIH

To the Editor:

The treatment of certain respiratory diseases, such as bronchial asthma, is based on systemic and inhaled corticosteroids.[1] However, their use has been associated with multiple side effects.[2,3] Iatrogenic Cushing's syndrome (CS) is typically a side effect of systemic corticosteroids, and its appearance after the use of inhaled corticosteroids (ICS) is rare. This complication has been studied more extensively in children[4] but it is rare in the adult population and often not properly considered when prescribing ICS. Nevertheless, any drugs that inhibit the cytochrome P450 (CYP450) enzyme pathway can induce CS. Some drugs used in the treatment of human immunodeficiency virus (HIV) are metabolized by this route.

Therapeutic strategies for the treatment of HIV have advanced significantly due to the availability of highly active antiretroviral therapy; however, the incorporation of new drugs means that we must be familiar with their metabolism and possible interactions to avoid side effects in our patients.

Some reports of iatrogenic CS caused by the interaction of fluticasone with ritonavir have been published,[5,6] and the interaction between inhaled fluticasone and cobicistat, a drug used in the treatment of HIV, has recently been described.[7]

We report the case of a 46-year-old man, diagnosed with HIV in 2008 and followed up in the infectious diseases department. He started treatment with cobicistat in 2018, his viral load was unde-

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