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ORIGINAL

Analysis of 208 flexible bronchoscopies performed in an intensive care unit☆

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KEYWORDS
Flexible bronchoscopy;
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Abstract
Objective: To describe the main indications, clinical results and complications associated with fibrobronchoscopy in the Intensive Care Unit (ICU).
Design: A retrospective, single-center observational study was carried out.
Setting: Seventeen beds in a medical/surgical ICU.
Patients: Consecutive patients undergoing fibrobronchoscopy during their stay in the ICU over a period of 5 years.
Interventions: Flexible bronchoscopy performed by an intensivist.
Main variables of interest: Flexible bronchoscopy indications and complications derived from the procedure.
Results: A total of 208 flexible bronchoscopies were carried out in 192 patients admitted to the ICU. Most of the procedures (193 [92.8%]) were performed in mechanically ventilated patients. The average patient age was 58 ± 16 years, with an APACHE II score at admission of 19 ± 7. The most frequent indication for flexible bronchoscopy was diagnostic confirmation of initially suspected pneumonia (148 procedures), with positive bronchoalveolar lavage findings in 46%. The most frequent therapeutic indication was the resolution of atelectasis (28 procedures). Other indications were the diagnosis and treatment of pulmonary hemorrhage, the aspiration of secretions, control of percutaneous tracheotomy, and difficult airway management. The complications described during the procedures were supraventricular tachycardia (3.8%), transient hypoxemia (6.7%), and slight bleeding of the bronchial mucosal membrane (2.4%).
Conclusions: A microbiological diagnosis of pneumonia and the resolution of atelectasis are the most frequent indications for flexible bronchoscopy in critically ill patients.
Flexible bronchoscopy performed by an intensivist in ICU is a safe procedure.

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PALABRAS CLAVE
Fibrobroncoscopia;
Unidad de Cuidados Intensivos;
Neumonía;
Atelectasias;
Lavado broncoalveolar

Análisis de 208 fibrobroncoscopias realizadas en una unidad de cuidados intensivos

Resumen
Objetivo: Describir las principales indicaciones, resultados clínicos y complicaciones de la fibrobroncoscopia en enfermos críticos.
Diseño: Estudio retrospectivo, observacional, de un solo centro.
Ámbito: Unidad de Cuidados Intensivos (UCI) médico-quirúrgica de 17 camas.
Pacientes: Pacientes consecutivos a los que se les realizó una fibrobroncoscopia durante un periodo de cinco años.
Intervenciones: Fibrobroncoscopia realizada por médicos especialistas en Medicina Intensiva con fines diagnósticos y/o terapéuticos.
Principales variables de interés: Indicaciones y complicaciones derivadas de la fibrobroncoscopia.
Resultados: Se han realizado 208 fibrobroncoscopias en 192 pacientes; en el momento del procedimiento 193 (92,8%) recibían ventilación mecánica invasiva. La edad media de los pacientes incluidos fue de 58 ± 16 años y el APACHE II al ingreso en UCI de 19 ± 7. La mortalidad global fue del 31,3%. Las indicaciones más frecuente fueron en 148 (71,2%) casos por sospecha clínica de neumonía y en 28 (13,5%) para resolución de atelectasias. La fibrobroncospia fue eficaz en 120 (57,7%) casos, con resolución de la atelectasia en 20 casos, 71,4% y obteniendo resultados positivos del LBA en 68 (46%) de los casos con sospecha de neumonía. Se han detectado 27 complicaciones menores en 208 (13%) pacientes. Las complicaciones más frecuentes han sido: taquicardia supraventricular (3,8%), hipoxemia transitoria (6,7%) y hemorragia leve de la mucosa bronquial (2,4%).
Conclusiones: El diagnóstico microbiológico de neumonías y la resolución de atelectasias fueron las indicaciones más frecuentes. La fibrobroncoscopia realizada por especialistas de Medicina Intensiva es un procedimiento eficaz y seguro.

Introduction

Fibrobronchoscopy has become the procedure of choice in most airway explorations, and is an important tool in the diagnosis and treatment of a number of pulmonary disorders in critically ill patients.[1–4] The expansion of its use in Intensive Care Units (ICUs) is attributable to the fact that the technique is relatively easy to perform at the patient bedside,[2] avoids the need for potentially dangerous patient transfer outside the ICU, and poses few complications.[5] As a result, fibrobronchoscopy is presently considered to be an essential element in critical care.[5,6]

Although in principle critical patients are more prone to develop complications during fibrobronchoscopy, individuals subjected to mechanical ventilation, thanks to their secured airway, are paradoxically at lesser risk than when fibrobronchoscopy is performed in spontaneously breathing patients. The present study describes the main indications, clinical outcomes, effectiveness of bronchoalveolar lavage (BAL), and complications of fibrobronchoscopy in critical patients.

Patients and methods

A retrospective, observational, single-center study was made in a clinical-surgical ICU with a polyvalent unit of 10 beds and a coronary unit with 7 beds. Over a period of 5 years, the study included consecutive patients subjected to fibrobronchoscopy while admitted to the ICU. The following clinical characteristics were analyzed: patient age, APACHE II score upon admission, mortality, indications of fibrobronchoscopy, and complications of the technique. Exploration was not performed in cases where the clinical and/or hemodynamic condition of the patient was unable to guarantee safe fibrobronchoscopy. The following exclusion criteria were established: endotracheal tube under 8 mm in diameter, pneumothorax evidenced on the chest X-rays prior to fibrobronchoscopy, oxygen saturation <90% as determined by pulsioxymetry, with FiO_2 1, severe acidosis (pH < 7.20), and hemodynamic instability defined by systolic blood pressure <90 mmHg despite the administration of vasoactive drugs.

During the procedure, continuous electrocardiographic monitorization was carried out using Datex-Ohmeda S/5 bedside monitors. Blood pressure was noninvasively measured using the M-NE12STPR module, and in those cases where the value was found to be under 90 mmHg, the pressure was checked using a manual cuff and sphygmomanometer. Depending on the reason for admission to the ICU, the patients were classified as surgical patients (admitted to the ICU from the operating room or from surgical areas after a recent operation), neurological patients (admitted to the ICU with central nervous system disease), trauma patients (admitted to the ICU due to severe trauma), immune depressed patients (admitted to the ICU with immune system disorders) and clinical patients (admitted to the ICU from the emergency care area or medical specialty hospitalization wards).

Following verbal and written informed consent, the technique was carried out using an Olympus type 40/240