Annales Françaises d'Anesthésie et de Réanimation 33 (2014) e67–e72

Original article

A survey of percutaneous chest drainage practice in French university surgical ICU's☆

Évaluation des pratiques du drainage pleural percutané dans les réanimations chirurgicales universitaires françaises

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ARTICLE INFO

Article history:
Received 18 December 2013
Accepted 6 February 2014
Available online 14 March 2014

Keywords:
Intensive care
Pleural drainage
Pleural effusion
Tube thoracostomy
Thoracic tube
Trocar

ABSTRACT

Objective. – Percutaneous chest drainage guidelines were published in 2010 by the British Thoracic Society. On several points (insertion technique, drain size), they seem to differ from French practices. Our objectives were to evaluate practice of pleural drainage in French University surgical intensive care units (ICU's), and to compare it with the British guidelines.
Study design. – National phone survey.
Methods. – Physicians working in 58 ICU's were surveyed first in 2007, and subsequently in 2012. They were read a questionnaire to evaluate the demographic characteristics of their units, their indication for pleural drainage, how they quantified pleural effusion, and their technique for drain insertion. Data from the two surveys were compared to detect an evolution in practice following the publication of the British guidelines. Results are expressed as the mean response.
Results. – In 2007, pleural drainage indications relied on various respiratory criteria in 91% of cases (versus 95% in 2012) and/or on pleural effusion volume in 71% of cases (versus 59% in 2012). Trocars (Monod or Joly) were used in 68% of the procedures in 2007. In the rest, either blunt dissection, a Pleurocath® or the Seldinger technique was utilized. From 2007 to 2012, the Seldinger technique increased in frequency (10% versus 22%, $P = 0.005$) while Monod trocar usage decreased (41% vs 29%, $P = 0.012$). Ultrasound before pleural effusion drainage became nearly systematic in 2012 (60% vs 86%, $P < 0.001$).
Conclusion. – The frequent use of trocar (and therefore of large drains) for pleural drainage in French ICU's differs significantly from the British guidelines.

Mots clés :
Réanimation
Drainage pleural
Pleurésie
Trocart

RÉSUMÉ

Objectif. – Le drainage pleural percutané d'une pleurésie aseptique a fait l'objet de recommandations anglaises en 2010 (British Thoracic Society). Par certains aspects (techniques de drainage, taille des drains), elles semblent différer des pratiques françaises. L'objectif de ce travail était d'évaluer la pratique du drainage pleural percutané dans les réanimations chirurgicales universitaires françaises et de la comparer aux recommandations anglaises.
Type d'étude. – Enquête nationale téléphonique.
Méthodes. – Enquête téléphonique réalisée en 2007 puis répétée en 2012, dans les 58 unités de réanimation chirurgicale universitaires de France métropolitaine. Les caractéristiques démographiques des réanimations, les pratiques concernant les indications, la quantification d'une pleurésie et la

☆ The abstract of this work has been presented at the congress of the *Société française d'anesthésie et de réanimation* in Paris on September the 19th, 2013 (R428).

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0750-7658/$ – see front matter
http://dx.doi.org/10.1016/j.annfar.2014.02.009

réalisation du drainage ont été recueillies en utilisant un questionnaire type. Les 2 phases ont été comparées pour dépister une évolution des pratiques.

Résultats. – Les indications de drainage reposaient sur divers critères respiratoires dans 91 % des cas en 2007 (95 % en 2012) et/ou le volume de l'épanchement dans 71 % des cas (59 % en 2012). Des trocarts (Monod, Jolly) étaient utilisés dans 68 % des drainages en 2007. Les autres drainages étaient effectués par une technique chirurgicale, le Pleurocath® ou une technique de Seldinger. Entre 2007 et 2012, cette dernière technique progressait (10 % versus 22 %, $p = 0{,}005$) au détriment de l'emploi des trocarts de Monod (41 % vs 29 %, $p = 0{,}012$). Le repérage échographique avant drainage est devenu systématique (60 % vs 86 %, $p < 0{,}001$).

Conclusion. – Les pratiques des réanimations chirurgicales universitaires françaises diffèrent notablement des recommandations anglaises sur deux points : l'utilisation majoritaire de trocarts, et donc de gros drains.

1. Introduction

Percutaneous pleural drainage is frequently performed in the ICU. Pneumothorax, haemothorax and empyema indications for drainage are well defined [1]. On the other hand, the indications for sterile pleural effusion drainage are still controversial. These effusions never require emergent drainage, hence further tests can be performed to confirm their diagnosis and enhance the safety of the procedure. Recently, bedside ultrasound in the ICU has improved diagnosis [2–4] and quantification [5–9] of pleural effusion. It has also decreased the incidence of complications [10–11] and cost [12] secondary to thoracocentesis.

However, despite the use of ultrasound, several studies using computerized tomography have demonstrated that the incidence of malpositioned drains in acute care patients has been largely underestimated [13–15]. Between 2005 and 2008, 27 severe complications due to pleural drainage (including 12 deaths) were reported in England and Wales [16]. These findings led the "National Patient Safety Agency" to publish recommendations for safer practices. Similarly, in 2010, the British Thoracic Society (BTS) updated its recommendations [1] that were initially published in 2003 [17]. The 2010 recommendations of the BTS included the use of chest ultrasound and the Seldinger technique for drain insertion. To our knowledge, no similar recommendations appear elsewhere. These recommendations seem to differ from routine French practice. However, unlike the experience in the United Kingdom, no national survey has been performed. Therefore, it has been impossible to document these potential different practices on percutaneous pleural drainage.

This study was aimed at evaluating pleural drainage practice in French University surgical ICU's, comparing its evolution between 2007 and 2012, and comparing that practice with the 2010 BTS pleural disease guideline.

2. Methods

2.1. Survey

The phone survey complies with the COREQ guidelines [18]. It included 58 surgical ICU's in the 26 metropolitan French medical Universities. The list of these ICUs was extracted from a file provided by the ICU committee of the Société Française d'Anesthésie et de Réanimation. All these ICU's were jointly directed by a department of Critical Care and Anaesthesia. The survey aimed at interviewing all French University surgical ICU's, so no data saturation process was planned. In each ICU, a senior physician was interviewed (fellows were not interviewed). The interviewees were advised that, apart from a single question, they were not being asked about their own individual practice, but rather the practices of the entire team managing the ICU. The question addressing the interviewee's individual practice concerned the detailed description of drain insertion with a trocar (Appendix A).

The first part of the questionnaire dealt with patient demographics, volume and type of patient selection, and the nature of drained pleural effusions. The second part of the questionnaire comprised the main objectives of the study. It included questions about diagnosis, quantification, indication criteria and drainage technique for sterile pleural effusions (excluding pneumothorax and haemothorax) (Appendix A).

The survey was first performed between November 2007 and August 2008 (phase 1). No relationship was established with the interviewees before the survey. Three pilot interviews were carried out in our department before starting the survey. The survey was repeated between May and September 2012 (phase 2) to evaluate the potential impact of the BTS recommendations which were published in 2010 [1]. The questionnaire performed in 2012 included all the questions asked in 2007/2008, plus questions concerning the description of pleural drainage with a trocar, ultrasound-guided pleural drainage, and knowledge of the BTS recommendations (text in bold in the Appendix A). A single male investigator performed the survey in 2007/2008 (FR) and in 2012 (YB), from his workplace. At the time of the survey, both worked in the department of anaesthesiology and intensive care (FR as a physician, YB as a resident). Both worked at least 2 years in an ICU. The questions were read by the interviewer, always in the same order. The field notes were made during the interview. The interviews lasted about 20 minutes. Neither feedback nor transcript was returned to interviewees. The aim of the study was briefly described to the interviewees (but without reference to the BTS guidelines), and both interviewers presented their credential (ICU physician or resident). Incomplete or conflicting answers were resolved with further phone contact or by e-mail. No audio recording was performed. The question concerning the criteria leading to a decision to drain a sterile bloodless pleural effusion was open, and several criteria could be given by the interviewees. During the analysis, the first criterion given by each interviewee was considered as the principle one.

2.2. Statistics

The data were reported in an 84-column Excel file. Most of the data were not normally distributed. Therefore, the two phases of the survey were compared using non-parametric tests for matched data (Friedman or Wilcoxon's test). However, to enhance clarity, quantitative data were expressed as the mean value (± standard deviation). The qualitative data were expressed as the absolute value (percentage). The qualitative data of the two phases have been compared using Fisher's tests. A $P < 0.05$ was considered as significant. Statistical analysis was performed using PASW statistics18 (SPSS Inc., Chicago, IL).