

Complications of Invasive Procedures in Intensive Care

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Abstract

Original Research Article

Most procedures performed in the intensive care unit are invasive: tracheal intubation, tracheostomy, central catheterization, chest tubes and others. However, they are not without complications that can be life-threatening. The aim of this prospective epidemiological study is to assess the incidence of complications arising from invasive procedures performed in the ICU, and to analyze certain risk factors that expose patients to these complications. This was a prospective study of 453 invasive procedures performed in the various intensive care units of Casablanca University Hospital, over a period of 18 months, using 4 data sheets. In our series, central venous catheters accounted for 66% of invasive procedures. The average age of our patients was 40 years, and 67% were male. The main complications associated with the placement of central venous catheters are: Hematoma (16%); pneumothorax (3%), aberrant trajectory (4%) and thrombosis (3%). The incidence of hematoma is 20% when the procedure is performed on-call, and 38.3% when the operator has more than 2 years' experience. The second most frequently performed invasive procedure is tracheostomy, with a percentage of 16%, which most frequently cited complications are as follows: bleeding (12%), pneumothorax (8%), and subcutaneous emphysema (9%). Statistical analysis showed that there was no correlation between the occurrence of complications and the risk factors studied. Other complications accounted for less than 10%. The outcome of intensive care patients has improved considerably, thanks to the protocols proposed by the various hospitals. Reducing complications is an important objective, in which the importance of learning the procedure and the experience of the operator should figure prominently.

Keywords: Complications, incidence, intensive care, central venous catheters, pneumothorax, risk factors.

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INTRODUCTION

Most procedures performed in the intensive care unit are invasive: tracheal intubation, tracheostomy, central catheterization, chest tubes and others. However, they are not without complications that can be life-threatening.

The aim of this prospective epidemiological study is to assess the incidence of complications arising from invasive procedures performed in the ICU, and to analyze certain risk factors that expose patients to these complications.

MATERIALS AND METHODS

This was a prospective study of 453 invasive procedures performed in the various intensive care units of Casablanca University Hospital, over a period of 18 months, using 4 data sheets.

RESULTS

In our series, central venous catheters accounted for 66% of invasive procedures. The average age of our patients was 40 years, and 67% were male. The main complications associated with the placement of central venous catheters are: Hematoma (16%); pneumothorax (3%), aberrant trajectory (4%) and thrombosis (3%).

The incidence of hematoma is 20% when the procedure is performed on-call, and 38.3% when the operator has more than 2 years' experience.

The second most frequently performed invasive procedure is tracheostomy, with a percentage of 16%, which most frequently cited complications are as follows: bleeding (12%), pneumothorax (8%), and subcutaneous emphysema (9%)

Statistical analysis showed that there was no correlation between the occurrence of complications and the risk factors studied.

Other complications accounted for less than 10%, notably arterial catheter placement and thoracic drainage.

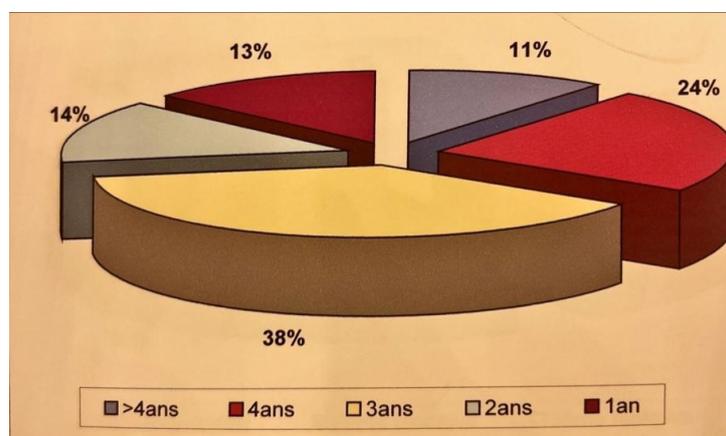


Figure-1: Showing the distribution of patients according to operator experience

DISCUSSION

Over the past 30 years, the use of central venous catheterization has become widespread in intensive care units. However, their use exposes patients to the risk of numerous complications (infection, thrombosis, pneumothorax, hemorrhage, etc.).

A comparison between the literature and our work revealed that the risk factors most often incriminated were the operator's experience, the central venous catheter insertion site, the timing of the procedure and the number of attempts.

Recommendations for reducing the rate of complications associated with the use of intravascular catheters are still based on expert consensus. It is therefore important to prevent these complications through rigorous management of catheter placement and handling.

According to the literature, the rate of tracheostomy-related complications varies from 4% to 10%; they are potentially the same regardless of the technique used, whether surgical or percutaneous, and there are no randomized studies comparing the long-term outcome of patients using either method. In our work, we studied risk factors such as the operator's specialty and experience, but there was no significant correlation between these and the occurrence of complications.

CONCLUSION

The outcome of intensive care patients has improved considerably, thanks to the protocols proposed

by the various hospitals. Reducing complications is an important objective, in which the importance of learning the procedure and the experience of the operator should figure prominently, as should the prevention of infection.

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