

Blood sampling through systematic peripheral intravenous catheter placement in the Emergency Department: compulsion or reasonable practice?

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Introduction

In many emergency department (ED) intravenous peripheral catheters are systematically inserted as soon as incoming patients need blood samples. The rationale beyond such routine lies in the assumption that such catheters might further be useful to give any medications (like painkiller, contrast...) and represent a safety precaution in case of unexpected critical conditions. However, several catheters are never used, particularly in low acuity patients, generating pain, discomfort or complications, unnecessarily. The aim of the present study was to retrospectively evaluate to what extent such misplacement might occur in an ED of a University Hospital.

Methods

This was a retrospective study conducted in Liège University hospital ED, from September, to November, 2015. All incoming patients with an ELISA triage scale level 3 to 4 categorization were included. A systematic random sampling method was applied to this study population; the sample size was determined in accordance with previous reported data estimating the proportion of the unused catheters in emergencies between 34 and 56%. Therefore, a proportion of 0,5 with 0,02 acuity degree was used, allowing the optimisation of the sample size and its representativeness.

We evaluated the occurrence of catheters being inserted for blood sample simple only, but no further use and tried to identify predicting factors associated with such misuses.

Results

During the study period, 1679 patients were included in the study, of whom, 1629 (97%) underwent peripheral intravenous catheterization for blood sampling at the admission. In this population, 982 (60%) patients benefited from a useful catheter, while 647 (40 %) remained unused. Isolated uro-genital complains with a pain score < 5/10, or self referring patients < 49 year-old, no fever and a pain score < 5/10 were identified as accurate predictors for catheter placement futility.

Conclusion

As previously reported, most peripheral intravenous catheters systematically inserted in the ED of Liege University Hospital Centre for low acuity patients remained unused. This significant rate prompted the identification of predictors for such malpractice.

The impact of evidenced based recommendations as concerns the indication for peripheral vein catheterisation in the ED should be further evaluated.