THE DIAGNOSTIC VALUE OF PRE-HOSPITAL ARTERIAL BLOOD GAS

BERING, CAROLINE B. MD¹, ZINCUK, YECATARINA MD², ZWISLER, STINE T. MD PhD^{1,2}, ZINCUK, ALEKSANDER MD^{1,2} & MIKKELSEN, SØREN MD PhD^{1,2,3}

¹ Department of Anaesthesiology & Intensive Care, Odense University Hospital, Denmark

² The Mobile Emergency Care Unit, Department of Anaesthesiology & Intensive Care, Odense University Hospital, Denmark

³ Department of Clinical Research, Odense University Hospital, Denmark

INTRODUCTION

Arterial blood gas analysis (ABG) is an important diagnostic tool in management of critically ill patients within the hospital. It is, however, unknown whether this diagnostic modality can contribute to a more exact diagnosis in a mixed population of critically ill patients prehospitally. The aim of this study was to establish the diagnostic value of pre-hospital ABG. We investigated whether more patients received specific diagnosis (according to the WHO ICD-10 classification) reducing the numbers of observational or symptomatic diagnosis (WHO ICD-10 classification chapters XVIII and XXI, respectively), when ABG was available pre-hospitally.

METHOD

This single-centre prospective randomised controlled trial was conducted at a pre-hospital service. We compared two groups of adults with acute critical illness and Glasgow Coma Score (GCS)<13 treated by a prehospital anaesthesiologist. All patients received standard care treatment. In the intervention group, an ABG was obtained and analysed at the emergency site. The primary outcome was the impact of ABG on the pre-hospital tentative diagnosis. Furthermore, the Emergency Physician (EP) subjectively evaluated the usefulness of the ABG in pre-hospital diagnostics immediately after the emergency run.

RESULTS

310 patients were randomized, 155 in each group. 53 patients were excluded in the ABG group and 35 patients in the non-ABG group. The main exclusion cause was failed post hoc consent from next-of-kin or family physician.

There were no differences in the percentage of patients given an observational or symptomatic diagnosis pre-hospitally among the 2 groups. The EP reported that the ABG generally contributed positively to the treatment at the emergency site ($P<0,001$) and furthermore contributed to a more precise diagnosis ($P=0,001$).

SELF-REPORTED BENEFIT OF ARTERIAL BLOOD GAS ANALYSIS

CONCLUSION

Although pre-hospital ABG did not affect the percentage of observational and symptomatic diagnoses, the EPs reported that pre-hospital ABG improved the precision of pre-hospital diagnosis and quality of treatment in patients with acute critical illness and GCS<13.

CONTACT

Søren Mikkelsen
soeren.mikkelsen@rsyd.dk