Title

Assessment of accuracy of capnography and auscultation to ensure correct nasogastric tube insertion in patients with low consciousness in educational hospitals of university of medical sciences in Kermanshah, 2014

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Abstract

Background & Aim: Widely, nasogastric tube (NGT) is inserted incorrectly and is associated with serious complications, which can be life threatening. There are numerous challenges on the best methods to verify the location of the tube and prevent the entry of NGT into the airways. Accordingly, this study was conducted to compare the accuracy of capnography (use of end-tidal carbon dioxide detector) and epigastric auscultation with the accuracy of radiography as a standard in detecting the location of NGT.

Materials and Methods: This study was a cross-sectional study (assessment of diagnostic tests) and sampling was consecutive. Participants in the study include 120 patients (in emergency setting) with low consciousness admitted to educational hospitals of university of medical sciences in Kermanshah, 2014. The NGT was first inserted 30 cm and connected to a capnograph. If the capnograph was not detected carbon dioxide, insertion was completed to a total distance of 50 cm. An epigastric auscultation after air insufflation and a second capnography was performed. Data analysis formulas to determine the sensitivity, specificity, positive predictive value and negative likelihood were used.

Results: 57.5% of the patients were male and the mean age of the patients was 41.58 ±16.65 years. The Glasgow Coma Scale (63.35% of patients) was 11-14. The findings showed that in the first 30 cm of insertion 23.33% of capnograph was positive. Sensitivity and positive predictive value were 75.2% and 97.7% respectively, for epigastric auscultation. Specificity and negative predictive value was 100% for capnography. X-ray showed that none of NGTs was placed in the airway.

Conclusion: It is recommended that more than one method to verify NGT inserted in an emergency setting and in the intensive care unit to be used. Capnography can be used as a safe, fast, non-invasive method combined with epigastric auscultation to accurate in ensuring correct NGT insertion and to prevent from entering NGT to airway and potential complications.

Keywords: Nasogastric tube, Capnography, Epigastric auscultation, Sensitivity, Specificity, predictive value, Accuracy.