Misplaced Endotracheal Tubes After Field Intubation

In recent studies, 9% to 25% of intended endotracheal intubations performed by emergency medical services personnel were unrecognized esophageal intubations (JWEM Mar 21 2001 and JWEM Sep 24 2003). In this study, researchers evaluated misplacement rates in a prospective study of 208 consecutive patients who were intubated nasotracheally or orotracheally by paramedics (without rapid sequence intubation drugs) and brought to two trauma center emergency departments in Indianapolis. On patient arrival, emergency physicians verified tube placement using a combination of direct visualization, colorimetric ETCO₂ detectors, esophageal detector devices, and physical examination. Paramedics were aware that the study was being performed.

Tube placement verification devices (types not specified) were used in the field in 45% of cases. Overall, 5.8% of tubes were misplaced; three of the misplaced tubes were in patients in whom verification devices were used in the field. The authors did not specify the location of the misplaced tubes, but direct communication with one of the authors revealed that most were in the esophagus.

Comment: Misplacement rates were lower in this study than in previous ones, but this rate is still alarming. When it comes to misplaced endotracheal tubes, there is no room for error -- prolonged, undetected esophageal placement is a lethal complication, and a misplacement rate of 5.8% is unacceptable. At the very least, paramedics must use tube placement verification devices and should have access to alternative means of ventilation and oxygenation, such as laryngeal mask airways (LMAs) and Combitubes, for use in difficult situations. This study and others raise legitimate questions about whether paramedics ought to be intubating at all and whether simpler ventilation devices, such as the LMA or Combitube, should be used.

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