

OHCA airway management: laryngeal tube insertion vs. endotracheal intubation



Among adults with out-of-hospital cardiac arrest (OHCA), a strategy of initial laryngeal tube (LT) insertion, compared with endotracheal intubation (ETI), was associated with greater likelihood of 72-hour survival, according to a new randomised clinical trial published in JAMA.

"These findings suggest that LT insertion may be considered as an initial airway management strategy in patients with OHCA, but limitations of the pragmatic design, practice setting, and ETI performance characteristics suggest that further research is warranted," writes Henry E. Wang, MD, MS, Department of Emergency Medicine, University of Texas Health Science Center (pictured above), with co-researchers.

In the U.S. and countries with advanced emergency medical services (EMS) systems, paramedics commonly perform ETI on patients with cardiac arrest to provide a direct conduit to the lungs, facilitate controlled oxygenation, and protect the lungs from aspiration of vomitus. However, numerous studies have highlighted the challenges of paramedic ETI, including significant rates of unrecognised tube misplacement or dislodgement, need for multiple ETI attempts, and ETI insertion failure.

Alternatives to ETI include supraglottic airway (SGA) devices including the laryngeal mask airway, oesophagealtracheal combitube, i-gel, and LT. Compared with ETI, SGA insertion is rapid, simple, and requires less training, while offering ventilatory characteristics that are similar to ETI. However, multiple observational studies reported better outcomes associated with ETI compared with SGAs.

To compare the effectiveness of initial LT and initial ETI strategies on outcomes in adult OHCA, Dr. Wang and colleagues conducted this multicentre pragmatic cluster-crossover clinical trial involving EMS agencies from the Resuscitation Outcomes Consortium. The trial included 3,004 adults with OHCA and anticipated need for advanced airway management who were enrolled from 1 December 2015 to 4 November 2017. The final date of follow-up was 10 November 2017.

The study's primary outcome was 72-hour survival. Among 3,004 enrolled patients (median [interquartile range] age, 64 [53-76] years, 1,829 [60.9%] men), 3,000 were included in the primary analysis. Rates of initial airway success were 90.3% with LT and 51.6% with ETI. Seventy-two hour survival was 18.3% in the LT group vs. 15.4% in the ETI group (adjusted difference, 2.9% [95% CI, 0.2%-5.6%]; $P = .04$).

Secondary outcomes in the LT group versus ETI group were return of spontaneous circulation (27.9% vs. 24.3%; adjusted difference, 3.6% [95% CI, 0.3%-6.8%]; $P = .03$); hospital survival (10.8% vs. 8.1%; adjusted difference, 2.7% [95% CI, 0.6%-4.8%]; $P = .01$); and favourable neurological status at discharge (7.1% vs. 5.0%; adjusted difference, 2.1% [95% CI, 0.3%-3.8%]; $P = .02$). Regarding key adverse events, there were no significant differences in oropharyngeal or hypopharyngeal injury (0.2% vs. 0.3%), airway swelling (1.1% vs. 1.0%), or pneumonia or pneumonitis (26.1% vs. 22.3%).

The trial demonstrated the effectiveness of an LT-based strategy of advanced airway management, not the efficacy of the LT airway device. The authors explain: "OHCA resuscitation requires the careful coordination of multiple interventions, including initiation and maintenance of chest compressions, controlled ventilation, vascular access, drug administration, and defibrillation. The simpler LT technique may better integrate with and facilitate these other treatments."

In an accompanying editorial, Lars W. Andersen, MD, MPH, PhD (Research Centre for Emergency Medicine, Department of Clinical Medicine, Aarhus University Hospital) and Asger Granfeldt, MD, PhD, DMSc (Department of Intensive Care Medicine, Aarhus University Hospital) note that endotracheal intubation is a skill that needs practice to acquire and maintain.

Despite limitations, the editorialists say, the trial by Wang et al. provides important new evidence regarding airway management in OHCA and again raises the important question of whether ETI should be the preferred choice of airway management.

"EMS personnel and physicians involved with protocol development for EMS systems in the United States, United Kingdom, and similar settings with limited exposure to advanced airway management should reconsider the routine use of endotracheal intubation as the first-line strategy for airway management in out-of-hospital cardiac arrest," the editorial says.

Source: JAMA

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