Peri-Intubation Cardiac Arrest, a risk that isn't talked about much

Areeba Saleem, Hira Islam

Madam, Among the many high-risk treatments used on critically sick patients, tracheal intubation (TI) is one of the most preferred actions. Out of many risk factors associated with tracheal intubation, cardiac arrest (CA) is a rare, but the most serious and least considered risk. In most studies, peri-intubation CA (PICA) is referred to as, when it occurs within 5-60 minutes following the intubation procedure.[1] According to different studies, the estimated incidence of PICA varies from 1.8% to 3.1%.[1-3] One would think that the rate of PICA would be higher outside of the hospital because the environment isn't as good as in the hospital and it's harder to get help if there are problems with intubation. Significantly, in a study performed by Jardine C G et al,[2] the incidence rate (2.5) of out of hospital PICA is comparable to that reported earlier in hospitalized patients who required emergency intubation.

According to Jardine C G at al, PICA is linked to several parameters that contribute to arterial oxygen desaturation during intubation.[2] One such factor was being overweight.[2,5] Arteriole desaturation happens much more rapidly in obese patients than in those of normal BMI because of their diminished oxygen reserves. A greater number of intubation attempts is also one of the main factors leading to PICA.[1,3,4] Increased risk of peri-intubation CA was also seen in individuals with increased lactate levels (metabolic acidosis) compared to those without.[1,5] Cardiogenic pulmonary oedema patients are also at risk of PICA.[1] Due to their inhibitory influence on catecholamine release caused by stress, neuromuscular blocking drugs like succinylcholine and rocuronium may cause cardiac arrest.[2,4,5]

PICA being a serious risk factor associated with TI, these preventative steps may significantly lower the likelihood of developing PICA.

- It should be made sure that successful intubation should be done at the first attempt to avoid risk of PICA.
- Ketamine and etomidate use should be preferred as they have favourable haemodynamic effect.[3]
- PICA incidence may be decreased by using bag mask ventilation prior to intubation, which lessens the possibility of arterial desaturation.
- It is imperative that immediate resuscitation in case of PICA can reduce the number of deaths caused by it.
- Calculating shock index prior to intubation can help in improved management of the patient.

3rd Year MBBS Student, Karachi Medical and Dental College, Karachi, Pakistan.
Correspondence: Hira Islam. e-mail: hnaz70075@gmail.com
ORCID ID. 0000-0002-7761-1817

Disclaimer: None.

Conflict of interest: None.

Funding disclosure: None.

DOI: https://doi.org/10.47391/JPMA.7973

Submission completion date: 24-01-2023

Acceptance date: 18-05-2023

References

1. Yang TH, Chen KF, Gao SY, Lin CC. Risk factors associated with peri-intubation cardiac arrest in the emergency department. Am J Emerg Med 2022; 58: 229-34.
2. Gil-Jardiné C, Jabre P, Adnet F, Nicol T, Ecollan P, Guihard B, et al. Incidence and factors associated with out-of-hospital peri-intubation cardiac arrest: a secondary analysis of the CURASMUR trial. Intern Emerg Med 2022; 17: 611-7
3. Russotto V, Myatra SN, Laffey JG, Tassistro E, Antolini L, Bauer P, et al. INTUBE Study Investigators. Intubation Practices and Adverse Peri-intubation Events in Critically Ill Patients From 29 Countries. JAMA. 2021; 325: 1164-72
4. Park C. Risk factors associated with inpatient cardiac arrest during emergency endotracheal intubation at general wards. Acute Crit Care 2019; 34: 212-8
5. Wardi G, Villar J, Nguyen T, Vyas A, Pokrajac N, Minokadeh A, Lasoff D, Tainter C, Beitler JR, Sell RE. Factors and outcomes associated with inpatient cardiac arrest following emergent endotracheal intubation. Resuscitation 2017; 121: 76-80.