INCIDENCE OF HYPEROXIA IN TRAUMATICALLY INJURED PATIENTS RECEIVING PRE-HOSPITAL EMERGENCY ANAESTHESIA: A 5-YEAR RETROSPECTIVE ANALYSIS

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Aims/Objectives/Background Previous studies have demonstrated an association between hyperoxia and increased mortality in various patient conditions. In the present study, we aim to investigate the incidence of hyperoxia in trauma patients receiving PHEA, and we aim to determine factors that may help guide prehospital oxygen administration.

Methods/Design A retrospective cohort study was performed of all patients who received PHEA by a single helicopter emergency medical service (HEMS) service between 1 October 2014 and 1 May 2019 and who were subsequently transferred to one major trauma centre (MTC). Patient and treatment factors were collected from the electronic patient records of the HEMS service and the hospital. Hyperoxia was defined as a PaO2 >160, based on the first arterial blood gas analysis upon arrival to hospital.

Results/Conclusions On presentation to the MTC, the majority of the patients (90/147, 61.2%) had severe hyperoxia, 30 patients (20.4%) had mild hyperoxia, 26 patients (19.7%) had normoxia, and 1 patient (0.7%) had hypoxia. The median [IQR] PaO2 in the first ABGA after HEMS handover was 36.7 [18.5–52.2] kPa, with a range of 7.0–86.0 kPa. SpO2 readings before handover were independently associated with presence of hyperoxia. An SpO2 ≥97% was associated with significantly increased odds of hyperoxia (OR 3.99 [1.58–10.08], and had a sensitivity of 86.7 [79.1–92.4%], specificity of 37.9 [20.7–57.8%], positive predictive value of 84.5 [70.2–87.9%] and a negative predictive value of 42.3 [27.4–58.7%] for presence of hyperoxemia.

HEMS oxygenation strategies are effective; trauma patients who have undergone PHEA often have a profound hyperoxemia upon arrival in hospital. In the prehospital setting where ABGA is not readily available, target SpO2 of 94–98% as recommended in BTS Guidelines should guide FiO2 titration to reduce risk of tissue hyperoxia. Predeparture checklists should include an agreed system to adjust FiO2 according to a patient’s SpO2 rather than fixed concentration.