JOURNAL CLUB SUMMARIES

What's hot that the other lot got

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OXYGEN SUPPLEMENTATION IN ACUTE STROKE

Hypoxia is common following acute stroke and associated with greater mortality and neurological morbidity. The Stroke Oxygen Study, a prospective, single-blind, multicentre, randomised controlled trial compared outcome between routine low-dose oxygen therapy and usual care (oxygen delivered to achieve target saturations) during the first 3 days after an acute stroke (Roffe *et al*, *JAMA* 2017;318:1125–35). Non-hypoxic patients were randomised to receive either continuous low-dose oxygen (3L/min if saturations were <94%; 2L/min if saturations were ≥94%), nocturnal oxygen only or usual care. Outcomes were assessed at 1 week and 90 days. Primary outcome was the modified Rankin Scale (mRS) score, a measure of disability. Secondary outcomes included mortality, neurological improvement, quality of life and activities of daily living scores. There were 8003 participants included in the study. There was no demonstrable benefit of continuous or nocturnal oxygen over usual care on mRS at 90 days (OR 0.97, 95%CI 0.89 to 1.05, P=0.45 for combined oxygen groups vs control) in either the main study population or prespecified subgroups including more hypoxic (P=0.93), early presentation (P=0.47) or more severe stroke (P=0.37). The authors concluded that routine administration of low-dose oxygen supplementation in non-hypoxic individuals after acute stroke does not provide any prognostic or outcome benefit.

CAPILLARY PO_2 IN HYPOXAEMIC PATIENTS WITH COPD

Arterialised capillary blood gases (CBG) are increasingly used as a substitute to arterial gases in the assessment for longterm oxygen therapy (LTOT). CBGs are less invasive, require smaller samples, cheaper and can be performed by non-medical staff. This study (Magnet *et al*, *Int J Chron Obstruct Pulmon Dis* 2017;12:2647–53) sought to compare capillary PO_2 (P_cO_2) with arterial PO_2 (P_aO_2) in patients with Global Initiative for Chronic Obstructive Lung Disease category ≥2 with resting P_cO_2 ≤60 mm Hg. Simultaneous capillary and arterial sampling were performed by two operators. Bland-Altman analysis revealed that the mean difference between P_aO_2 and P_cO_2 was 5.99±6.05 mm Hg, with wide limits of agreement (−5.88 to 17.85 mm Hg). When using a threshold of P_cO_2 ≤60 mm Hg to indicate eligibility for LTOT, 30.4% of patients would be unnecessarily prescribed LTOT. The authors concluded that CBGs do not accurately estimate P_aO_2 in hypoxaemic patients with COPD. Despite early termination of the study the conclusion is robust;even with the prespecified sample size, the interim analysis demonstrated that it was mathematically impossible for the predetermined proof of agreement to be achieved.

OXYGEN THERAPY IN MODERATE BRONCHIOLITIS

Management of hypoxia is a cornerstone in the management of infant bronchiolitis. The evidence to support the use of high-flow warm humidified oxygen (HFWHO) instead of usual care (cold wall oxygen via infant nasal cannulae up to 2L/min) in moderate bronchiolitis is limited and largely extrapolated from other study populations. This study (Kepreotes *et al*, *Lancet* 2017;389:930–939) was a prospective, open-label, phase IV randomised controlled trial designed to determine whether HFWHO reduced time on oxygen in infants (<24 months) suffering from bronchiolitis. Infants being presented to the emergency department with a clinical diagnosis of moderate bronchiolitis requiring supplemental oxygen were randomised to receive either usual care or HFWHO at a maximum flow of 1L/kg/min to a limit of 20L/min using a 1:1 air:oxygen ratio. Randomisation was stratified for gestational age at birth. The primary outcome was time from randomisation to oxygen wean. Secondary outcomes included time from randomisation to treatment failure and proportion of serious adverse events. There were 202 children included in the study. Time to weaning off oxygen was 24 hours in the usual care group and 20 hours in the HFWHO group (HR 0.9, 95%CI 0.7 to 1.2, P=0.61). Thirty-three per cent of the infants in the usual care group suffered from treatment failure compared with 14% in the HFWHO group (P=0.0016). No adverse effects were noted. The authors concluded that there was no benefit of HFWHO in time to weaning off oxygen but that HFWHO appeared to reduce the incidence of treatment failure. This study elegantly provides evidence for the use of HFWHO (at a maximum of 1L/kg/min) in the management of infants with moderate bronchiolitis in whom usual care with 2L/min has failed.

OXYGEN THERAPY IN ACUTE MYOCARDIAL INFARCTION

Oxygen supplementation is frequently used in clinical practice in normoxic patients following acute myocardial infarction (MI). Potential adverse effects include coronary vasoconstriction and reactive oxygen leading to reperfusion injury. The Determination of the Role of Oxygen in Suspected Acute Myocardial Infarction trial was a registry-based, multicentre, open-label, randomised controlled trial comparing 6L/min of supplemental oxygen therapy with ambient air in non-hypoxic patients with suspected MI (Hofmann *et al*, *NEJM* 2017;377:1240–9). The primary endpoint was all-cause mortality at 1 year after randomisation. Secondary endpoints included all-cause mortality at 30 days and readmission with MI. There were 6629 patients enrolled and included in the intention-to-treat analysis. Five per cent of patients receiving oxygen therapy had died at 1 year, compared with 5.1% of patients randomised to ambient air (HR 0.97, 95%CI 0.79 to 1.21, P=0.8). The composite endpoint of all-cause mortality and readmission with MI occurred in 8.3% in the oxygen group and 8.0% in the ambient air group (HR 1.03, 95%CI 0.87 to 1.22, P=0.7). The data suggest no role for supplementary oxygen therapy in non-hypoxic patients following an acute MI.

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