Reviewer's report

Title: Survival of outborns with congenital diaphragmatic hernia: the role of protective ventilation, early presentation and transport distance: a retrospective cohort study

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Reviewer: Kabir Abubakar

Reviewer's report:

The manuscript Survival of outborns with congenital diaphragmatic hernia: the role of protective ventilation, early presentation and transport distance: a retrospective cohort study addresses a very important issue relevant to the global management of infants with congenital diaphragmatic hernia. The authors described their outcomes in a single tertiary referral center over a period of 14 years.

The question posed by the authors is well defined and most of the methods appropriate and well described, however there are certain questions that need to be addressed to make the manuscript acceptable:

MAJOR COMPULSORY REVISIONS

Study Setting:

The authors state that since all subjects were outborn “Patient transfers were accomplished by ground ambulance and ventilation during transfer was assisted via hand-held, self-inflating bags or conventional ventilator integrated in transport incubator”.

This is a very important issue that can significantly affect pulmonary outcomes. Providing IPPV with a self-inflating bag without the benefit of PEEP can cause significant lung injury in a patient with an already hypoplastic lung that can be enough to impact the subsequent pulmonary outcome compared to ventilation with a conventional ventilator that is able to provide both PIP and PEEP. This could be true for both locally or remotely born infants since even a few breaths without PEEP may be enough to set off important cascades leading to lung injury. Are the authors able to tease out which infants received what type of support enroute top the referral center? If so could these likely affect the outcomes noted?

Management strategies:

The authors stated that “Epoch I. Neonates were sedated, paralyzed, and ventilated with IMV to achieve respiratory alkalosis and postductal oxyhemoglobin saturation above 90% to ameliorate pulmonary hypertension. This strategy often required high PIP, respiratory rates and oxygen concentrations. In Epoch II, neonates received protective ventilation aimed to
minimize volutrauma with the use of minimal pressure and volume settings and inspired oxygen concentration to achieve acceptable preductal oxygenation saturations (# 85%) while permitting hypercapnia (# 65 mm Hg)”. Are there any ventilator parameter data used in the 2 study periods e.g. mean PIP, mean airway pressure or the amount of PEEP used? In Epoch II when synchronized and volume targeted ventilation became available are there any data regarding what tidal volumes were used?

Results:

There appears to be a better survival rate and better pH on admission among the remote transfers compared to the local transfers although this does not reach statistical significance. Are there any data regarding how the local and remote babies were provided respiratory support during transport? i.e. who was “hand bagged” and who was transported using a transport ventilator? For instance were the transport ventilators reserved for the remote transfers and the local transfers provided hand ventilation? If so this may produce more lung injury among the “hand-bagged” infants accounting for their lower pH and survival.

In table 2 the authors provided data for the first admission blood gas among study subjects which was more likely a reflection of the interventions before arrival at the referral hospital. Are there any data about subsequent blood gases” during” the hospital stay to allow a comparison of the efficacy of the management strategies in the 2 epochs?

MINOR ESSENTIAL REVISIONS:

Table 3, reported the mean hours between delivery and surgery to be 24.5 vs. 23 in the 2 groups. This is an incredibly short period of time to take the patients to surgery since there is evidence to show that waiting for the pulmonary vascular resistance to decrease before surgery does affect outcome. I understand that this is a retrospective data collection, but the authors should address this in the discussion.

Level of interest: An article of importance in its field

Quality of written English: Acceptable

Statistical review: No, the manuscript does not need to be seen by a statistician.

Declaration of competing interests:

'I declare that I have no competing interests'