

Research Media Watch:

Kamale Vijay*, Thamke Rakesh**

*Prof. of Paediatrics & HoD, **Assistant Prof. Dept of Paediatrics MGM Medical College, Kamothe, Navi Mumbai

1. Fluid overload and outcomes in critically ill children: A single center prospective cohort study.

Diaz F1, Benfield M2, Brown L3, Hayes L4.

IN J Crit Care. 2017 Jun;39:209-213. doi: 10.1016/j.jcrc.2017.02.023. Epub 2017 Feb 16.

This prospective study was done to evaluate the association between fluid overload (FO) and clinical outcomes, mortality, mechanical ventilation (MV), and duration and length of stay in a pediatric intensive care unit (PICU). Patients who were on MV for >24h or vasoactive support were included. The study spanned over 12 months. Demographic and clinical data were recorded. Daily FO was calculated as [(fluid in-fluid out)/admission weight]×100%. Multivariate stepwise logistic regression analysis was used to determine predictors of survival.

Results:

224 patients were included with median age was 3.3 (IQR 0.7, 9.9) years, mortality was 15.6%. The median peak FO (PFO) was 12.5% (IQR 5, 25), PFO>10% was present in 55.8% of patients, and PFO>20% was present in 33%. The PFO in non-survivors was 17.8% (IQR 8, 30) and 11% (IQR 4, 23) in survivors (p=0.028). A survival analysis showed no association between PFO and mortality. A multivariate analysis identified vasoactive support, >3 organ failures and acute kidney injury (AKI) but not FO as independent risk factors for mortality. FO was associated with MV duration and PICU length of stay.

Conclusion:

FO is frequent in a general PICU population, but PFO is not an independent risk factor for mortality. Future studies of FO should focus on patients with AKI and multiorgan failure for better classification of severity and potential interventions.

Keywords: *Fluid overload; PICU, AKI*

Comments:

Fluid overload is a condition of having too much water in body and is common problem in PICU as well as general ward. It can cause edema, discomfort in body, high blood pressure and sometimes shortness of breath. Iatrogenic FO, in PICU problem is complicated by presence of uni or multiorgan failure, close monitoring is required. Although this study shows no relation to mortality, further analysis is warranted. Still no clear evidence, one has to take utmost care to prevent possible morbidities.

2. Intracranial complications of CSOM in pediatric patients: A persisting problem in developing countries

Jain A1, Arora N2, Meher R2, Passey JC2, Bansal R2.

Background:

Intracranial complications (ICC) of chronic suppurative otitis media (CSOM) are common occurrence due to inappropriate and inadequate treatment even in the good antibiotic era. In pediatric patients, problems are due to poor hygiene and low immunity. They are more prevalent in developing countries due to illiteracy, low socioeconomic status and lack of access to health care facilities.

Objective:

To study the incidence, clinical profile, treatment and outcome of pediatric patients presenting with intracranial complications of chronic suppurative otitis media.

Methods:

A retrospective analysis of intracranial complications of CSOM in pediatric patients was conducted over a period of 15 years at a tertiary level institute. Data regarding age, sex, clinical presentation, laboratory and radiological investigations, management, duration of hospitalization, and outcomes were recorded.

Results:

There were 142 patients, in the pediatric age group, diagnosed as having intracranial complications due to chronic otitis media during the study period. There was a decline in the incidence of ICC of CSOM. The most frequent intracranial complication seen was brain abscess (58.5%). All patients were administered intravenous antibiotics for 4-6 weeks and underwent canal wall down mastoidectomy. Neurosurgical intervention was considered in the required patients. The case fatality rate in our study was 2.8% (4 patients).

Conclusion:

Otogenic intracranial complications can be fatal if not managed appropriately and timely. Broad spectrum intravenous antibiotics are usually required for 4-6 weeks with or without neurosurgical intervention and mastoid exploration. A high index of suspicion is required in all patients presenting with danger symptoms.

Keywords: Brain abscess; Intracranial complications of otitis media; Lateral sinus thrombosis; Mastoidectomy

Comments:

The WHO defines CSOM as otorrhea through a perforated tympanic membrane for at least two weeks. Because of varied guidelines like systemic antibiotics, local antibiotics alone to no local or systemic antibiotics, ENT specialists and treating pediatricians are still confused. The last WHO guidelines are in 2004 and Cochrane review was in 2006. The disease burden is high in India and treatment modalities like grommet insertion and mastoidectomy are not commonly done for various reasons in children.

PMID:28802356 DOI: 10.1016/j.ijporl.2017.06.038

3. A Randomized Clinical Trial of Umbilical Cord Milking vs Delayed Cord Clamping in Preterm Infants: Neurodevelopmental Outcomes at 22-26 Months of Corrected Age.

Katheria, Anup, Garey, Donna, Truong, Giang, Akshoomoff, Natacha, Steen, Jane, Maldonado, Mauricio, Poeltler, Debra, Harbert, Mary Jane, Vaucher, Yvonne E., Finer, Neil

Source:Journal of Pediatrics; Mar2018, Vol. 194, p76-80, 5p Publication Year:2018

Author-Supplied Keywords:

Bayley-III Bayley Scales of Infant and Toddler Development, third edition, CA Corrected age, DCC Delayed cord clamping, GMFCS Gross Motor Function Classification System, intraventricular hemorrhage, neonatal placental transfusion resuscitation

Abstract:

Objective To compare the effect of umbilical cord milking vs delayed cord clamping (DCC) on neurodevelopmental and health outcomes in very preterm infants at 22-26 months of corrected age. **Study design** Neuro developmental outcomes at 2 years of age were assessed using the Bayley Scales of Infant Development, third edition, and a standardized neurologic examination. Data regarding pulmonary morbidities, neurosensory impairments, and hospitalizations were obtained by parental interview. **Intention-to-treat** was used for primary analyses. **Results** Of the 197 infants enrolled in the original study there were 15 deaths, 5 in the umbilical cord milking group and 10 in DCC group. Of the remaining infants, 135 (74%) were assessed at 22-26 months of corrected age. Demographics in umbilical cord milking (n = 70) and DCC (n = 65) groups were similar. Infants randomized to umbilical cord milking at birth had significantly higher cognitive and language composite scores, and were less likely to have a cognitive composite score of <85 (4% vs 15%; P = .04). Motor function was similar in both groups. There were no differences in the incidences of mild or moderate to severe neurodevelopmental impairment, hearing or visual impairments, pulmonary morbidities, or rehospitalizations between the 2 groups. **Conclusions** Infants randomized to umbilical cord milking had higher language and cognitive scores compared with those randomized to DCC. There was no difference in rates of mild or moderate to severe neurodevelopmental impairment.

Comments:

Umbilical cord milking (UCM) should be routine practice in all hospital. UCM known to improve perfusion, systemic blood flow, it stabilizes blood pressure improve cerebral oxygenation. It is also associated with good urine output. It reduces changes of anemia a red cell transfusion. UCM in preterm babies at birth has low risk of oxygen requirement at 36 weeks and IVH of all grades. Dues to this UCM should not be considered as experimental procedure rather it should be added in protocol for all preterm or full term delivery and considered strongly in preterm care.

ISSN: 00223476 Accession Number:127961580

4. Zinc Protoporphyrin-to-Heme Ratio and Ferritin as Measures of Iron Sufficiency in the Neonatal Intensive Care Unit

Authors: German, Kendell, Vu, Phuong T., Grelli, Kimberly N., Denton, Christopher, Lee, Gina, Juul, Sandra E.

Source: Journal of Pediatrics; Mar2018, Vol. 194, p47-53, 7p Publication Year:2018

Author-Supplied Keywords:

AAP American Academy of Pediatrics, Darbe Darbepoetin, Epo Erythropoietin, ferritin, iron, iron sufficiency, NEC Necrotizing enterocolitis, neonates, NICU, NICU Neonatal intensive care unit, PENUT Preterm Epo Neuroprotection Trial, UW University of Washington, zinc protoporphyrin-to-heme ratio, ZnPP/H zinc protoporphyrin-to-heme ratio

Abstract: Objectives:

To evaluate ferritin and zinc protoporphyrin-to-heme (ZnPP/H) ratios as biomarkers of iron status in neonates, determine how specific clinical events affected these measures, and assess how iron status changed during hospitalization. Study Design: We performed a retrospective study of all infants with paired ferritin and ZnPP/H measurements between October 2014 and May 2016. Concordance of these measurements, effects of sepsis, red blood cell transfusion, erythropoietin treatment, and iron supplementation were assessed. Iron status was measured over time. Results: A total of 228 patients (mean birth weight 1.3 kg, median gestational age 29 weeks) were evaluated. Mean log ZnPP/H values in infants with and without sepsis were not significantly different (4.98 $\mu\text{mol/mol}$ vs 4.97 $\mu\text{mol/mol}$, adjusted $P = .103$), whereas log-transformed ferritin values increased significantly during infection (5.23 ng/mL vs 4.04 ng/mL, adjusted $P < .001$). Ferritin also increased more significantly than ZnPP/H following red blood cell transfusion (ferritin: mean 5.03 ng/mL vs 4.0 ng/mL, $P < .001$; ZnPP/H: mean 4.85 $\mu\text{mol/mol}$ vs 4.98 $\mu\text{mol/mol}$, $P < .001$). The mean iron supplementations at 30, 60, and 90 days were 5.4, 6.9, and 7.4 mg/kg/day, respectively. Ferritin values decreased with advancing postnatal age (adjusted $P < .001$), with 66% of ferritin values less than 76 ng/mL. Treatment with erythropoietin increased ZnPP/H, but not ferritin levels. Conclusions: Ferritin is more significantly affected by inflammatory events such as sepsis and transfusion than ZnPP/H, thus, ZnPP/H may be a more reliable marker of iron status in this population. Infants showed worsening iron sufficiency over time despite supplementation above American Academy of Pediatrics guidelines.

Comments:

Zinc protoporphyrin (ZPP) is a compound found in red blood cells when heme production is inhibited by lead and/or by lack of iron. Instead of incorporating a ferrous ion, to form heme, protoporphyrin IX, the immediate precursor of heme, incorporates a zinc ion, forming ZPP. The reaction to insert a ferrous ion into protoporphyrin IX is catalyzed by the enzyme ferrochelatase. Measurement of zinc protoporphyrin in red cells has been used as a screening test for lead poisoning. and for iron deficiency. There are a number of specific clinical situations in which this measurement has been found to be useful. ZPP measurement is not very costly and can be useful for anemia of ambiguous or mixed etiology. However, its application in practice may require further studies