

Abstract from Current Literatures

A Prediction Model for Pediatric Radiographic Pneumonia

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Background: Chest radiographs (CXRs) are frequently used in the diagnosis of community- abstract acquired pneumonia (CAP). We sought to construct a predictive model for radiographic CAP based on clinical features to decrease CXR use.

Methods: We performed a single-center prospective study of patients 3 months to 18 years of age with signs of lower respiratory infection who received a CXR for suspicion of CAP. We used penalized multivariable logistic regression to develop a full model and bootstrapped backward selection models to develop a parsimonious reduced model. We evaluated model performance at different thresholds of predicted risk.

Results: Radiographic CAP was identified in 253 (22.2%) of 1142 patients. In multivariable analysis, increasing age, prolonged fever duration, tachypnea, and focal decreased breath sounds were positively associated with CAP. Rhinorrhea and wheezing were negatively associated with CAP. The bootstrapped reduced model retained 3 variables: age, fever duration, and decreased breath sounds. The area under the receiver operating characteristic for the reduced model was 0.80 (95% confidence interval: 0.77–0.84). Of 229 children with a predicted risk of 39%, 140 (61.1%) had CAP (specificity of 90% at a 39% risk threshold).

Conclusions: A predictive model including age, fever duration, and decreased breath sounds has excellent discrimination for radiographic CAP. After external validation, this model may facilitate decisions around CXR or antibiotic use in CAP.

Association Between Pulsatility Index and the Development of Necrotizing Enterocolitis in Infants with Congenital Heart Disease.

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Background: Infants with congenital heart disease are known to have higher rates of necrotizing enterocolitis (NEC) which is associated with poorer outcomes. Although the etiology is recognized as distinct from the premature neonatal population, there is not a universal consensus regarding etiology or specific risk factors.

Method: In this retrospective single-institution case-control study, we assessed whether aortic pulsatility index (PI) as detected via ultrasound might be associated with NEC in neonates undergoing cardiac surgical repair within the first month of life.

Result: The study identified 30 participants who developed NEC and 50 matched controls. Baseline demographic and surgical characteristics were similar between groups. Patients who developed NEC had higher mortality (26% vs 4%, $p < 0.01$). Standard PI and the modified pulsatility values were calculated manually and underwent logistic regression. The median log PI of the NEC cohort was higher compared to the lowest control PI (0.68 vs 0.48, $p = 0.03$); the median log PI of the NEC cohort was significantly lower than the highest PI of the control cohort (0.61 vs 0.98, $p = 0.05$). The modified pulsatility index demonstrated similar trends with the median log MODPI of the NEC cohort being significantly greater than that of the control cohort (3.9 vs. 3.1, $p = 0.01$).

Conclusion: Infants with congenital heart disease who develop NEC have a higher PI and MODPI when compared to the lowest control PI. This suggests that infants with a higher baseline PI may be at increased risk for developing NEC.

Parent-Reported Sleep Profile of Children With Early-Life Epilepsies

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Background: Sleep comorbidities are common, and sometimes severe, for children with early-life epilepsies (ELEs). Yet, there is a paucity of data regarding the profile of these sleep disturbances and their complications.

Methods: Participants registered with the Rare Epilepsy Network (REN) were queried about sleep via online questionnaires. Descriptive statistics and logistic regression were performed.

Results: Median age of the 356 children was 56 months (interquartile range 30 to 99), 56% were female, and 53% (188/356) endorsed a sleep concern. Frequent nighttime awakenings (157 of 350; 45%), difficulty falling asleep (133 of 350; 38%), and very restless sleep (118 of 345; 34%) were most endorsed. Nocturnal seizures were associated with sleep concerns and were reported in 75% (268 of 356) of children. Of the children with nocturnal seizures, 56% (118 of 268) had sleep concerns. Of the children without nocturnal seizures, 43% (38 of 88) had sleep concerns. Sleep concerns were most common in dup15q syndrome (16 of 19; 84%). Children aged 4 to <10 years (adjusted odds ratio [aOR] 16.1; 95% confidence interval [CI] 2.0, 131.0) and 10 to <13 years (aOR 22.2; 95% CI 2.6, 188.6) had a greater odds of having a sleep concern compared with children aged <6 months. Female sex appeared protective for sleep concerns (aOR 0.6; 95% CI 0.4, 0.9). The association between sleep concerns and nocturnal seizures was weaker when adjusted for sex and age category in a logistic regression model.

Conclusions: Reported sleep concerns are highly prevalent in children with ELEs and persist with age, in contrast to what is expected in healthy children. There may be unmet sleep-related clinical needs in children with ELEs.

Efficacy and safety of angiotensin-converting enzyme inhibitors or angiotensin receptor blockers for IgA nephropathy in children.

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Background: IgA nephropathy (IgAN) is one of the most prevalent primary glomerulopathies in children. There are various studies investigating the efficacy of angiotensin-converting enzyme inhibitors (ACEI) and angiotensin II receptor blockers (ARB) in adults with IgAN. However, only few studies evaluated the efficacy of these medications in pediatric patients.

Objective: To evaluate the efficacy and safety of ACEI/ARB in children with IgAN.

Methodology: Observational studies (case series, case-control, cohort, and cross-sectional) and clinical trials with descriptions of pediatric patients (under 19 years old) with histopathological diagnosis of IgA nephropathy and who received ACEI and/or ARB.

Results: After recovering 1,471 studies, only eight, published between 2003 and 2019, met the eligibility criteria and were included in this systematic review. Of the 737 included children in the studies, 202 (25.8%) used ACEI/ARB and were compared with placebo and other therapy regimens. Of the seven studies that evaluated proteinuria, six reported an efficacy of ACEI/ARB in reducing this marker. ACEI/ARB also showed a possible effect in reducing hematuria and oxidative stress. The most common side effect was dizziness.

Conclusions: The use of ACEI and/or ARB appears to be safe and to reduce proteinuria in pediatric patients with IgAN. Nonetheless, further randomized controlled trials, with greater methodological rigor and longer follow-up time, are required to establish the efficacy and safety of this therapy in this population.