Pedia Companion

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Pedia Companion Newsletter

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Dear Doctor,
Greetings from Micro Labs Limited. We are happy to bring you "PEDIA COMPANION" which contain latest and interesting news in the field of Paediatrics.

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1.A study on Recurrence of adverse events following immunization upon revaccination

Introduction:

Immunization is regarded as one of the most cost-efficient and successful public health initiatives, preventing more than 2.5 million child fatalities annually. The success of an immunisation programme depends on the establishment of a reliable and effective health-care system that can provide and scale up the immunisation service. Widespread anxiety about the possibility of adverse events following vaccination (AEFI) may result in low vaccination rates, a decline in the use of vaccines, or even a comeback of diseases that can be prevented by vaccination.[1] There is a dearth of literature describing the risk of AEFI recurrence; the majority of data are from a single site or are restricted to a particular AEFI or vaccination.[2] This study aimed to determine the likelihood of adverse events after vaccination (AEFIs) would reoccur after revaccination and to examine if allergy skin test positivity was related to AEFI recurrence in patients with suspected vaccine allergies.

Among those with suspected vaccine allergy, skin testing may help determine the safety of revaccination.

Methods:

Patients with AEFIs who needed revaccination with the vaccine that was temporally related with their AEFI were enrolled in this prospective observational trial after being examined in the Immunization Clinic Network. Participants underwent standardised evaluations, and data was collected. The medical professionals at the Special Immunization Clinic based their suggestions on guidelines. After receiving a booster shot, participants were monitored to detect any AEFI recurrences. Data were moved to a single database so that descriptive analysis could be performed.

Results:

A total of 588 participants were evaluated for 627 AEFIs; 570 (91%) of these AEFIs involved children under the age of 18. Among the AEFIs were seizures (26/627; 4%), thrombocytopenia (11/627; 2%), significant local responses (110/627; 18%), nonurticarial rash (51/627; 8%), and immediate hypersensitivity (130/627; 21%). 513 out of 588 individuals (87%) had their immunizations evaluated. During the study period, 63% (299/477) of patients who were recommended and due for revaccination underwent the procedure. A total of 10% (31/299) of AEFI recurrences, 31% (15/49) of significant local reactions, and 7% (5/66) of immediate hypersensitivity were seen. There were no serious reccurences. The negative predictive value of skin testing for AEFI recurrence was 96% (95% CI 92.5%-99.5%) among 92 participants with suspected vaccination allergy who underwent skin testing and were revaccinated.

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Discussion:

This study examined 588 people who were screened in the SIC Network for a prior AEFI and who needed revaccination to learn about revaccination and AEFI recurrence. A total of 87% of participants received a revaccination recommendation, and 63% of those who were due for one during the study period received one. The frequency of AEFI recurrence differed depending on the kind of AEFI, with non-seizure neurologic episodes having the lowest frequency and major local reactions having the highest. [2] Most recurrences were less severe or on par with the initial AEFI, and none qualified as serious based on CIOMS/WHO criteria.[3] These findings taken together should reassure medical professionals and patients with prior AEFIs regarding the safety of revaccination.

AEFI recurrences and vaccine types	Overall recurrence by vaccine type	Large local reaction	Other injection-site reaction*	Immediate hypersensitivity reaction†	Delayed-onset hypersensitivity and other allergic-like event‡	Seizure	Other neurologic AEFI§	Other systemic AEFI¶
Recorded revaccination	N = 299	N = 49	N = 10	N = 71	N = 55	N = 13	N = 8	N = 93
Overall recurrence	31 (10)	15 (31)	2 (20)	5 (7)	4 (7)	1 (8)	0 (0)	4 (4)
Vaccine type, No. (%)								
DTaP/Tdap	10/166 (6)	3/14 (21)	1/7 (14)	1/37 (3)	0/28 (0)	1/9 (11)	0/6 (0)	4/65 (6)
Influenza	13/64 (20)	10/27 (37)	0	2/15 (13)	0/10 (0)	0	0/1 (0)	1/11 (9)
PCV	6/119 (5)	1/6 (17)	1/4 (25)	0/25 (0)	2/20 (10)	1/9 (11)	0/4 (0)	1/51 (55)
Rotavirus	0/61 (0)	N/A	N/A	0/16 (0)	0/10 (0)	0/2 (0)	0/2 (0)	0/28 (0)
MMR/MMRV	6/61 (10)	2/7 (29)	0/1 (0)	1/21 (5)	2/10 (20)	0/4 (0)	0/1 (0)	1/17 (6)
Varicella	3/35 (9)	1/2 (50)	0/1 (0)	1/12 (8)	1/5 (20)	0/4 (0)	0/1 (0)	0/10 (0)
Men-C	5/55 (9)	2/8 (25)	0	2/10 (20)	0/2 (0)	0/2 (0)	0/2 (0)	1/20 (5)
HPV	5/25 (20)	2/5 (40)	0/1 (0)	1/6 (17)	2/8 (25)	0	0	0/5 (0)
HepB	4/27 (15)	2/5 (40)	0/1 (0)	1/3 (33)	1/10 (10)	0	0	0/8 (0)
MenB	0/7 (0)	0	0	0	0/2 (0)	0/1 (0)	0	0/4 (0)
Other**	1/11 (9)	1/2 (50)	0	0	0/3 (0)	0/2 (0)	0	0/4 (0)

AEFI recurrences by vaccine type and AEFI type (N = 299)

(HepB, hepatitis B vaccine; Hib, Haemophilus influenzae type B; HPV, human papillomavirus vaccine; Men, Meningococcal; MMRV, Measles, mumps, rubella, and varicella vaccine; N/A, not availabe; PCV, pneumococcal conjugate vaccine.)

Conclusion:

According to the study's findings, the chance of a severe AEFI recurrence is low, especially for patients who had AEFIs with low to moderate impact, such as those that caused severe local reactions, acute hypersensitivity, or seizures. Skin testing may help determine whether revaccination is safe for people with suspected vaccine allergies.

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2. A retrospective cohort study on the interpretation of white blood cell counts in cerebrospinal fluid from newborns who had traumatic lumbar puncture.

Introduction:

Meningitis is a potentially fatal condition that is frequently caused by bacteria or viruses. Meningeal inflammation is referred to as meningitis.[1] Most frequently occurring in the first month of life, meningitis is known to have high rates of morbidity and fatality. When to perform a lumbar puncture (LP) to confirm the diagnosis might be tricky because newborn meningitis symptoms and indications are sometimes ambiguous. White blood cell (WBC) counts in cerebrospinal fluid (CSF) can be difficult to interpret, which makes it more difficult to diagnose neonatal meningitis after traumatic lumbar punctures (LP).[2] This study's objective was to identify the WBC count correction factor in traumatic LP that provides the best meningitis diagnostic accuracy.

Although CSF correction factors should be used with caution in neonates, Researchers show that correcting WBC values improved diagnostic yield in both bacterial and viral meningitis.

Methods:

A retrospective observational study of LP in newborns was carried out. Pleocytosis was defined as WBCs 20 cells/mm3 CSF and traumatic LP as an RBC count 1,000 cells/mm3 CSF. To find a new correction factor, linear regression was used to examine the CSF RBC:WBC ratio. ROC curves and tests of accuracy were used to examine cell count modifications utilising the 500:1, 1,000:1, and peripheral blood RBC:WBC ratio methods (sensitivity and specificity).

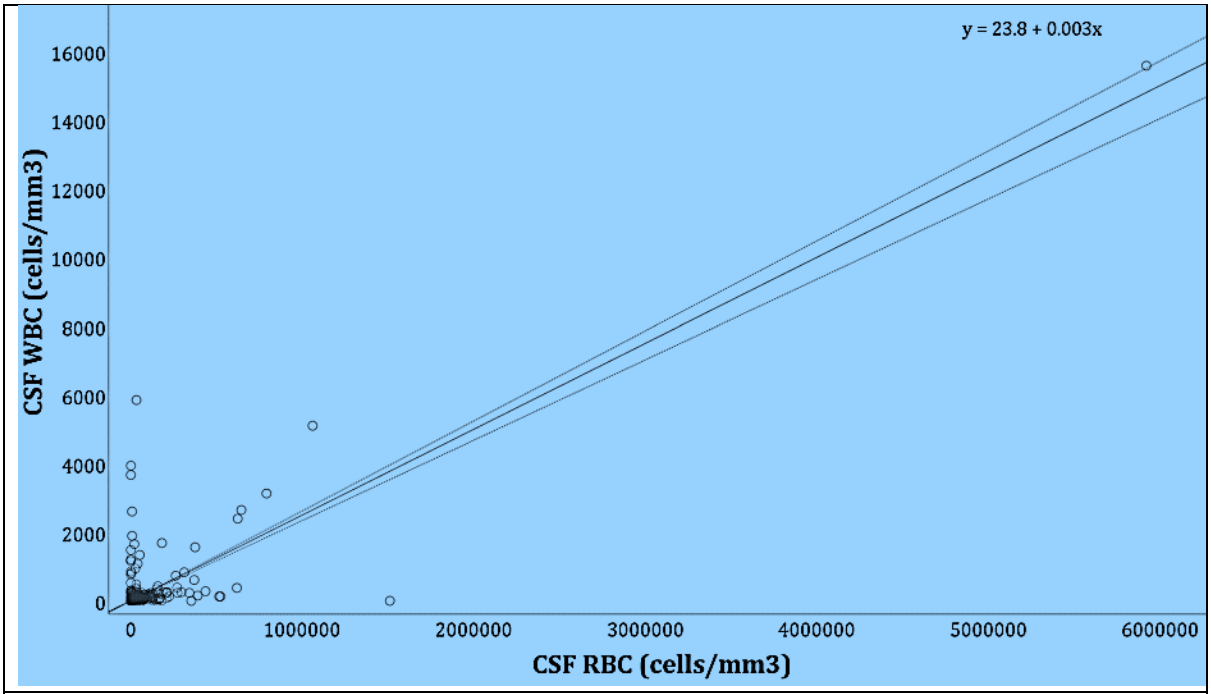
Results:

A total of 1,053 LPs were included in the study, and 41.0% of them were overall traumatic. The methods using the peripheral blood ratio (sensitivity = 1.0 and specificity = 0.9 for bacterial meningitis and sensitivity = 0.8 and specificity = 0.9 for viral meningitis) and the 400:1 ratio (sensitivity = 1.0 and specificity = 0.8 for bacterial meningitis and sensitivity = 0.8 and specificity = 0.8 for viral meningitis) obtained from linear regression (95% CI 381.7-427.4; R2 = 0.7) provided the best results.

Discussion:

Clinical judgments on the danger of bacterial and viral meningitis are complicated by the high occurrence of traumatic LPs in neonates. Furthermore, despite many CSF RBC cut-off points

being suggested in the literature, there is no clarity on how to interpret cell counts in traumatic LPs or how to define traumatic LPs. [2] In line with this sudy's findings, subsequent studies also demonstrate a higher incidence of traumatic LP in patients with a younger neonatal age.[3, 4] Researchers discovered no changes in the proportion of traumatic LPs according to sex and birth weight, which is also in line with the most recent studies that have been published.[3,5]



Relationship between CSF WBC and RBC count represented by linear regression (middile line) and its 95% confidence limits (dashed lines)

Conclusion:

Researchers demonstrate that correcting WBC counts enhanced diagnostic yield in both bacterial and viral meningitis, despite the fact that CSF correction factors in neonates should be used with caution. In particular, the 400:1 correction, which is more accessible and user-friendly, is advised in addition to the use of peripheral blood data. With both approaches, it is possible to significantly lower the proportion of infants with CSF pleocytosis in whom bacterial or viral meningitis is initially undiagnosed. With this method, neonatologists can examine WBC in CSF after traumatic LPs without administering antibiotics to all of the neonates.

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3.A Study on Early Pulmonary Hypertension in Preterm Infants and its Clinical Significance.

Introduction:

Pediatric pulmonary hypertension is a serious condition that can be fatal. In addition to being pulmonary vascular disease, pulmonary hypertension (PH) can also be secondary to other illnesses such congenital heart disease or respiratory conditions.[1] The condition known as bronchopulmonary dysplasia (BPD) is a common complication of extreme prematurity. More preterm infants are being diagnosed with pulmonary hypertension, which is linked to mortality, BPD, and long-term cardiorespiratory morbidity. Pulmonary vascular disease is usually linked to PH, which is characterised by elevated mean pulmonary arterial pressure (mPAP).[2] The purpose of this study was to describe several early pulmonary hypertension (PH) characteristics in preterm infants and their relationships to bronchopulmonary dysplasia (BPD) and survival.

Early pulmonary hypertension (PH) is highly prevalent in preterm infants and linked with the development of bronchopulmonary dysplasia, independent of the phenotype of PH.

Methods:

a prospective cohort study in a university medical centre with a higher education. The study comprised newborns with a gestational age 30 weeks and/or a birth weight 1000 grammes. Three to ten days after birth, an echocardiographic examination was done to check for PH. One committed paediatric cardiologist who was blinded to the patient's clinical condition read the echocardiograms. Mortality and the subsequent development of BPD at 36 weeks postmenstrual age were evaluated.

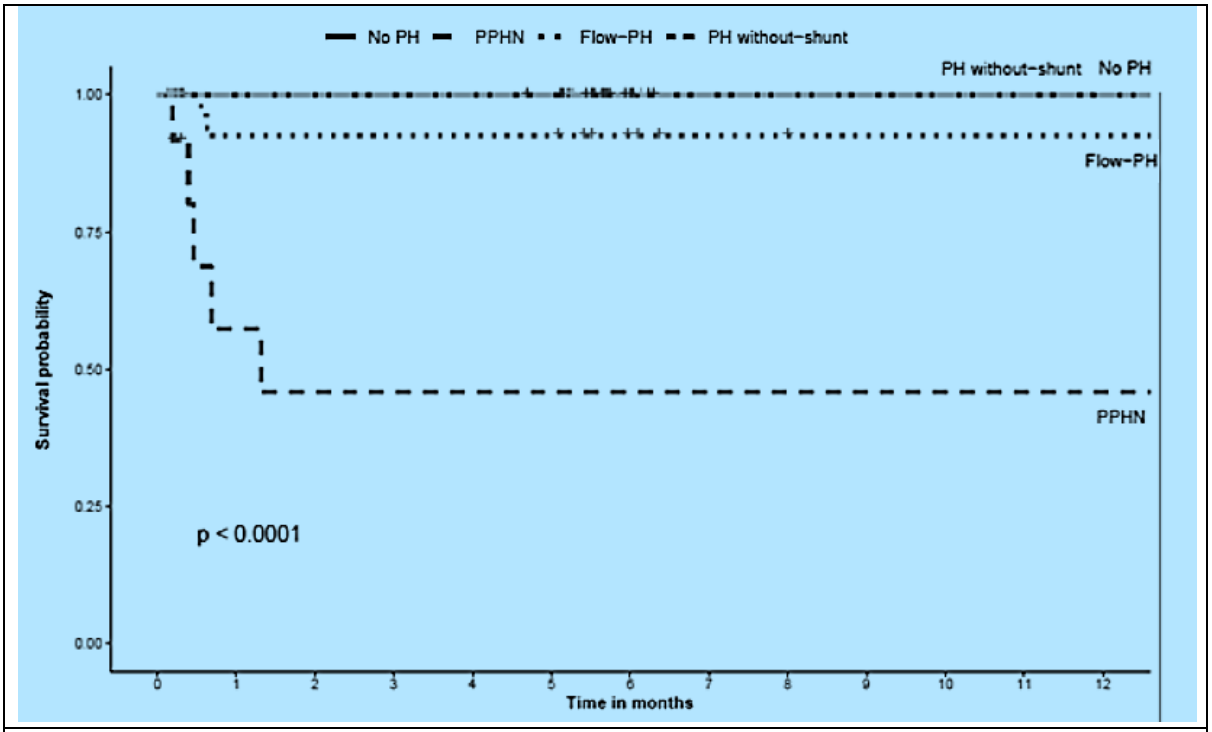
Results:

In Total of 104 infants who were included, 55% had early PH: 21% had persistent PH of the newborn (PPHN), 61% had flow-associated PH, and 18% had PH without shunt. Only PPHN was linked to low Apgar scores, lower gestational ages, and placental foetal vascular

malperfusion. The emergence of BPD was connected to both PPHN and flow-PH. Early-PH was linked to worse survival, which was caused by PPHN.

Discussion:

Early-PH was particularly frequent in preterm new-borns in our prospective cohort, occurring in 55% of cases, and was linked to severe morbidity. The most common phenotype in infants with early-PH was flow-PH (61%), which was followed by PPHN (21%) and PH without-shunt (18%). Prevalence in this sample was 45%, even after excluding the latter category, where PH was diagnosed based on weaker echocardiographic characteristics.[2] According to earlier studies, 3.4 to 44% of preterm-born infants had early-PH. 8,10-12 These percentages are clouded by variations in study design with relation to patient populations included, PH-phenotypes, early-PH criteria, and time of diagnosis.[3,4]



Kaplan Meier curve showing the survival of the infants with different PH-phenotypes after birth in months. Also, the number of infants at risk is Shown. The Log-rank test revealed that infants with PPHN had the poorest survival compared with other PH-phenotypes.

Conclusion:

Independent of the phenotype of PH, early-PH is quite common (55%) in preterm newborns and is linked to the emergence of BPD. PPHN infants had the lowest rates of survival. Early-PH manifests as a variety of phenotypes, each with its own aetiology, pathophysiology, and long-term aftereffects.

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4.A Case Report on Cantrell's Pentalogy and Ectopia Cordis

Introduction:

The Pentalogy of Cantrell (POC) is a group of five congenital midline birth abnormalities that pose a special challenge to medical professionals and surgeons,. cardiac malformations, partial absence of the pericardium, anterior diaphragm hernia, lower sternum defects, and abdominal wall defects are those five conditions.[1] The two classifications for this ailment are complete and partial. While others might only show partial defects, complete, as the term suggests, refers to the presence of all five defects. The syndrome, in which the heart is encased in a membrane resembling an omphalocele, is also known as thoracoabdominal ectopia cordis. Fetuses with POC frequently have Ectopia Cordis (EC).[2] Here is a case of Ectopia Cordis and Pentalogy of Cantrell in a newborn of a 35-year-old woman who was healthy and had no history of smoking or exposure to embryotoxins.

Ectopia cordis and pentalogy of Cantrell are uncommon conditions that have a variety of clinical symptoms and outcomes.

Case Presentation:

A 35-year-old housewife with three pregnancies and two live births was referred to the radiology division after second-trimester ultrasonography revealed omphalocele in her foetus. She has given birth twice previously via normal vaginal delivery to healthy children and has no prior history of smoking, illness, using particular medications, or congenital abnormalities. In the 23rd week of pregnancy, the Ultra sonographic report (US) revealed a small foetal chest with loss of the anterior chest wall, exposing the heart to the environment. Heart anomalies could not be ruled out because the US also revealed cardiac chambers that had somewhat lost their configuration. These results strongly suggested the Cantrell Pentalogy. Furthermore, the US report liver and bowel loops in a supra-umbilical omphalocele. Due to family financial issues, the amniocentesis was not done. An extra-thoracic heart was found anterior to the chest cavity on magnetic resonance imaging (MRI), along with a possible herniated left lung, a herniated liver through the anterior abdominal wall, a dilated colon with a possible stenosis or

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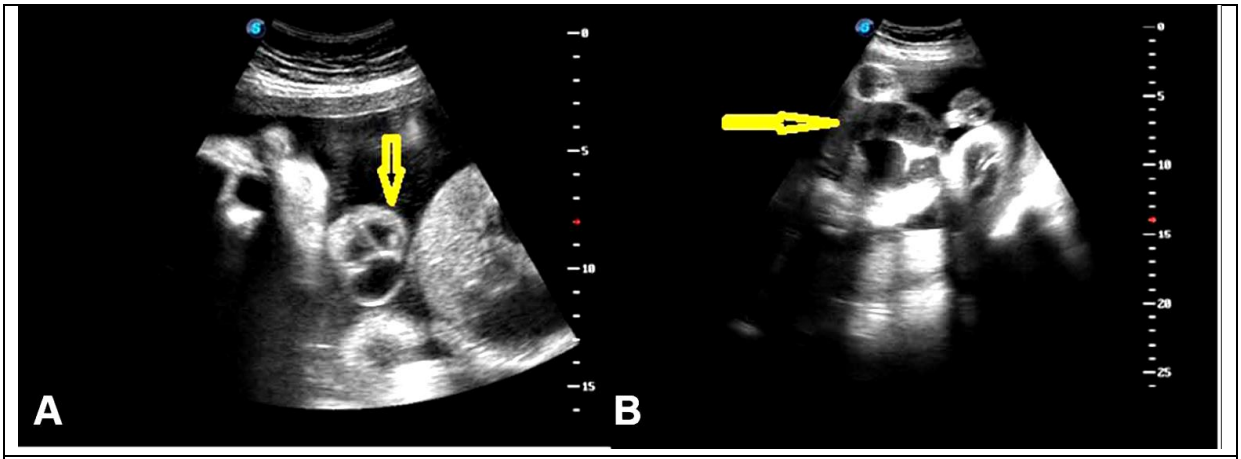
atresia, and evidence of spinal deformity. The aforementioned finding is consistent with the Cantrell Pentalogy and Ectopia Cordis. Despite being fully apprised of the circumstances, the parents decided to carry the baby because they had been battling secondary infertility for six years. The US revealed a male gender in the 33rd week of pregnancy and validated the Pentalogy of Cantrell and ectopia cordis diagnoses. At Teaching Hospital, the patient visited the delivery room. At 35 weeks' gestation, a caesarian section was used to deliver the baby.The newborn's height was roughly 46 cm. He was roughly 2100 g in weight. About 30 cm was the head circumference, and 25 cm was the thoracic perimeter. The newborn's Apgar scores were 3/10 and 6/10, respectively, in the first and fifth minutes. The infant had a large omphalocele that was covered in thick membranous and had the liver and bowel looping out of the abdomen. Additionally, a diaphragmatic hernia and mal-development of the distal region of the sternum were noted. The heart was situated outside the chest, associated with abnormalities. The child was brought into the neonatal intensive care unit (NICU) soon after birth. Due to growing respiratory failure, severe respiratory acidosis, and electrolyte imbalance in blood gas analysis, mechanical ventilation was assembled. Sadly, his general health declined, and on the second day he passed away from septicemia and respiratory failure.



Two-dimensional sonographic examination showed (**A**) heart and liver extruded through the lower chest and upper abdomen (yellow arrow). (**B**) Omphalocele containing liver, intestine, and dilated bowel loops (yellow arrow).

Discussion:

The severe congenital anomaly known as pentalogy of Cantrell was first identified in 1958.[3] Only a few reports of familial cases have shown a possible autosomal dominant, sex-linked disease, and the bulk of these cases are incidental. Ectopia cordis has been reported in a few cases, and the literature estimates that 80–100% of patients with Pentalogy of Cantrell have congenital cardiac abnormalities. The heart is completely or partially outside the thoracic cavity in ectopia cordis.[2] A significant diagnostic tool that enables the most effective method of advising a pregnant lady and her family is the combination of US and MRI. According to a related study by Satya et al, ultrasound is a useful, safe, nonionizing, economical, generally

accessible, and easily repeatable imaging method for POC diagnostics. When diagnosing POC, ultrasound should always be used as the primary method.[4]

Conclusion:

Ectopia cordis and pentalogy of Cantrell are uncommon conditions that have a variety of clinical symptoms and outcomes. These conditions necessitate the assessment of a multidisciplinary team in order to provide optimal prenatal counselling and postnatal care. Since infant survival evaluation and early diagnosis provide the parents the option of ending the pregnancy, prenatal studies with foetal ultrasonography, foetal MRI, karyotyping, and genetic counselling for related defects are crucial.

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