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FIRST ASSESSMENT OF THE INTERNATIONAL RISK SCORING TOOL FOR PREDICTING RESPIRATORY SYNCYTIAL VIRUS HOSPITALISATION IN PREMATURE MEXICAN INFANTS BORN AT 32–35 WEEKS GESTATIONAL AGE

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INTRODUCTION

The International Risk Scoring Tool (IRST) was developed using data predominantly from western populations and is highly accurate at predicting the risk of respiratory syncytial virus hospitalisation (RSVH) in premature infants born 32–35 weeks' gestational age (wGA). Utilisation of the IRST has also been found to guide RSV prophylaxis cost-effectively in several countries. We undertook the first assessment of the IRST in Mexico.

MATERIAL AND METHODS

Risk factor data for 32–35 wGA infants without comorbidities who had RSVH in the first year of life (cases) or not (controls) were assessed retrospectively at two Mexican hospitals. Apart from the IRST risk factors (birth 3 months before to two months after the RSV season start date; smoking in the household and/or maternal smoking; siblings and/or daycare), information on breastfeeding (defined as planned or established from birth to 3 months of age), maternal education to primary level (as a proxy for social deprivation), and sex were collected. Predictive accuracy was assessed by calculating the area under the receiver operating characteristic curve (AUROC), with ≥0.75 considered 'good'.

RESULTS

The IRST risk factors produced an AUROC of 0.766 for RSVH, which improved (0.791–0.876) when supplemented by the additional variables either singly or in combination (Table). The most powerful combination was the IRST risk factors plus maternal education and sex (AUROC=0.876). Combined use of all three additional risk factors was slightly less predictive (AUROC=0.868).

CONCLUSIONS

The IRST was highly predictive of RSVH in Mexican infants and fully supports its local adoption to aid the cost-effective targeting of RSV prevention in this cohort. The addition of maternal education, sex and/or breastfeeding positively increased predictive accuracy and should be preferentially considered when localising the tool.

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received compensation as advisor/lecturer from AbbVie, Sanofi Pasteur, MSD, GSK, Pfizer, and AstraZeneca. FEP and AMGO have nothing to disclose.

Risk factors added to core IRST risk factors	AUROC
None (IRST core risk factors only)†	0.766
Sex of the infant	0.791
Breastfeeding*	0.793
Breastfeeding* and sex of the infant	0.811
Maternal education	0.854
Breastfeeding and maternal education	0.868
Breastfeeding, maternal education and sex of the infant	0.868
Maternal education and sex of the infant	0.876

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Late onset sepsis as a common predisposing factor of kidney injury in newborns

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INTRODUCTION. Acute kidney injury (AKI) is a clinical condition associated with numerous adverse outcomes in newborns. Timely predicting the predisposing factors for AKI can allow appropriate intervention and could improve outcomes. The aim of the study was to determine the predisposing factors associated to kidney injury in newborns.

MATERIAL AND METHODS. The study was realized at the University Children's Hospital. It was designed as a prospective, epidemiological, clinical study. In the period of two years, 60 newborns hospitalized at the neonatal intensive care unit (NICU) with documented kidney injury were included. The severity of the disease was determined by RIFLE classification.. The material was statistically processed using methods of descriptive statistics.

RESULTS. We analyzed 60 newborns with acute kidney injury who at the period of 2 years were hospitalized in NICU. The estimated prevalence of AKI was 6.6% according to the standard definition while the prevalence according to RIFLE classification was 9.1%. Less of 36% of newborns with AKI had "risk", 50% "injury" and 14% had "renal failure". The most of evaluated newborns were male and born at term. Late onset sepsis was the most common predisposing factor for AKI present in 39% of cases with predomination in term and male newborns. Prematurity was found in 28%, asphyxia in 14%, congenital heart disease in 11% and meconium aspiration syndrome in 8% of cases. Mortality rate was 25% and it was higher in neonates with sepsis.

CONCLUSION. AKI is serious disease in hospitalized newborns in NICU associated with late onset sepsis as a dominant predisposing factor. By applying the RIFLE classification we could timely identify kidney injury and follow up the progression of the disease.

None declared

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RISK FACTORS AND PREDICTION MODELLING OF LATE-ONSET NEONATAL SEPSIS

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INTRODUCTION
Late-onset neonatal sepsis (LOS), associated with the hospital milieu, is a substantial contributor to neonatal morbidity and mortality. So far, the best combination of markers to predict LOS in newborns with the highest level of validation criteria has not been found.

MATERIAL AND METHODS
An ambispective (January, 2021 – June, 2023) clinical-epidemiological study was conducted in a third level NICU in Pleven, Bulgaria. Five hundred and nineteen patients with NICU stay above 72 hours were included (72 with nosocomial sepsis; 447 healthy controls). Twenty-one indicators were tested for influence on the occurrence of LOS. The administration of 4 probiotic preparations was evaluated as a possible preventive measure. This was followed by a quantitative assessment of the identified risk factors and threshold values establishment. A predictive model for the likelihood of developing LOS in newborns was created based on the risk and preventive factors. Comparative analysis, ROC curve analysis and multiple binary logistic regression analysis were applied. Data were entered and processed with the statistical packages IBM SPSS Statistics 27.0.1.0, MedCalc Version 19.6.3. and Office 2021 Excel. A significant level, rejecting the null hypothesis was $p<0.05$.

RESULTS
Seventeen indicators were significantly associated with the risk of LOS, of which 15 were risk factors and only two (probiotic prophylaxis and type of probiotic) were protective factors. With the greatest risk influence were total duration of parenteral nutrition (PN), chronic lung disease (CLD) and birth weight (BW), which increased the risk about 54-64 times. The administration of a probiotic preparation reduces the risk of the pathology by about 40-70%. A predictive equation was obtained, combining the factors total duration of PN $\geq$ 9.5 days, CLD, BW$\leq$ 1530 g and probiotic supplementation. Based on this data, we formed an easy-to-use tool called Calculator P.

CONCLUSION
Thorough analysis of risk factors, preventive measures like probiotic supplementation and development of a useful prognostic model can be beneficial to the particularly challenging problems of effective prevention, early diagnosis and timely and proper treatment of hospital-acquired infections. A prospective validation of Calculator P is needed.

None declared

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DAPTOMYCIN USE FOR PERSISTENT COAGULASE NEGATIVE STAPHYLOCOCCAL BACTEREMIA IN A NEONATAL INTENSIVE CARE UNIT, EXPERIENCE OVER A DECADE

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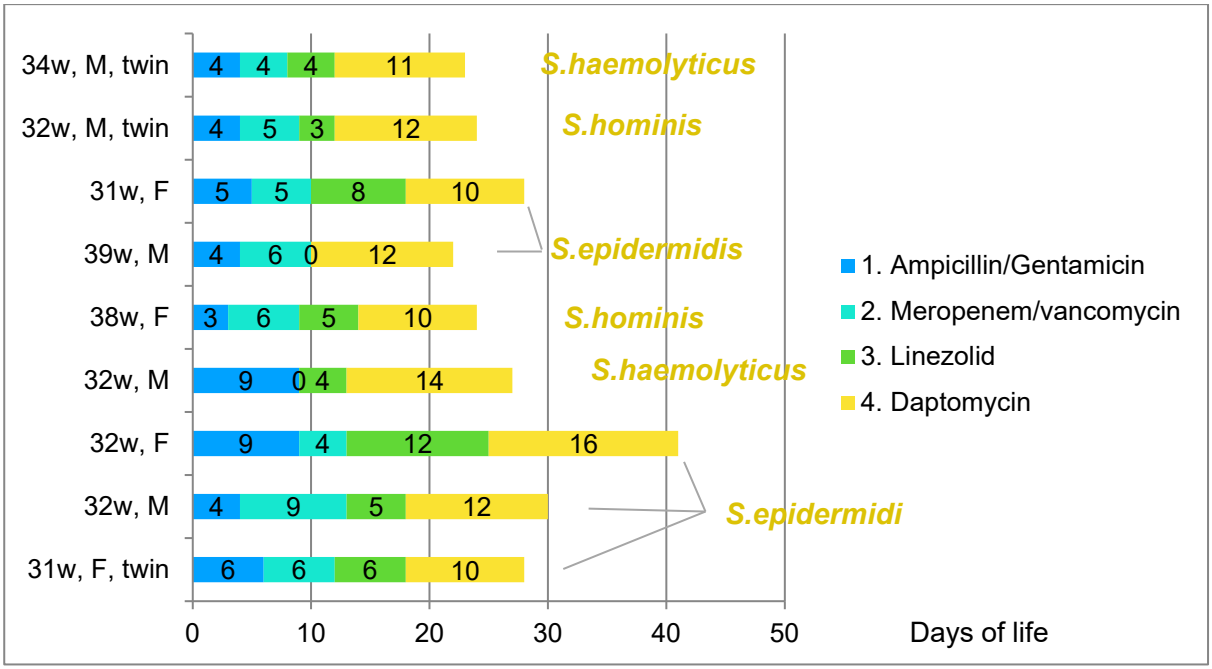
INTRODUCTION
During the last two decades the incidence of late onset sepsis (LOS) has increased due to improved survival of premature neonates. Persistent bacteremia in LOS is defined as more than two positive blood cultures obtained on different calendar days during the same infectious episode. Although rare, persistent bacteremia should be treated aggressively in order to prevent adverse outcomes. Daptomycin, a lipopeptide antibiotic, has been used in neonates with persistent CoNS bacteremia with promising results.

MATERIAL AND METHODS
In this retrospective, observational, case series study we present data of neonates, treated with daptomycin, during the period 2011 - 2022, in the Neonatal Intensive Care Unit (NICU) of the University General Hospital of Patras, Greece.

RESULTS
There were 12 patients included in the study and 66.7% (8/12) were male. Median gestational age and mean birthweight were 32 weeks (IQR 31.25-33.5) and 1840±867.4 grams, respectively. 70% (7/10) were delivered by emergency cesarean section and 60% (6/10) were intubated at birth. Antibiotic course, duration of treatment and causative pathogens are shown in figure 1. Decision to start daptomycin was taken on day 10 (IQR 7-15) of infection. None of the infants had focal complications or meningitis. No renal, hepatic, muscular or gastrointestinal adverse events were observed. 8% (1/12) developed seizures while on treatment with daptomycin (intracranial hemorrhage and meningitis were excluded). 91.6% (11/12) of infants were discharged and 8% (1/12) passed away due to multiple prematurity complications.

CONCLUSIONS
Daptomycin monotherapy showed an adequate cure rate in premature neonates with persistent CoNS bacteremia in a tertiary NICU. In our study, daptomycin was effective and well tolerated; the safety profile, however, needs to be confirmed in larger studies and randomised controlled trials.

None declared


34w, M, twin
4
4
4
11
S.haemolyticus
32w, M, twin
4
5
3
12
S.hominis
31w, F
5
5
8
10
S.epidermidis
39w, M
4
6
0
12
38w, F
3
6
5
10
S.hominis
32w, M
9
0
4
14
S.haemolyticus
32w, F
9
4
12
16
32w, M
4
9
5
12
S.epidermidi
31w, F, twin
6
6
6
10
0
10
20
30
40
50
Days of life
1. Ampicillin/Gentamicin
2. Meropenem/vancomycin
3. Linezolid
4. Daptomycin

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Immunological properties of human milk during pandemic of COVID-19

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Introduction: The pandemic of COVID-19 significantly impacted the nutritional status of children, especially those who were breastfed. Throughout the pandemic, we have witnessed adverse changes in lactation care which negatively impacted breastfeeding rates and the percentage of breastfeeding mothers globally. Currently, breastfeeding requires attention and safeguarding. It is also important to emphasize the unique immunological properties of breast milk, which has adapted to the epidemiological situation by providing protective factors for the breastfed child. Some of these immunoprotective factors were investigated at the Wroclaw University Hospital.

Material and Methods:
Initially, the concentrations of specific anti-SARS-CoV-2 IgG and IgM antibodies were measured in the breast milk and serum samples of 72 women of which 54 had a history of COVID-19 at various trimesters of pregnancy, 18 women with an active COVID-19 during delivery and control group of seventeen mothers with no history of COVID-19. Subsequently, the concentrations of lactoferrin were assessed in the colostrum samples obtained from 53 lactating mothers with confirmed SARS-CoV-2 active or past infection. Twenty-eight colostrum samples collected during the pre-pandemic period served as a control group. Enzyme-Linked ImmunoSorbent Assay was used for measurements.

Results: The serum and breastmilk samples of women with COVID-19 were characterized by a higher concentration of anti-RBD IgA and IgG when compared to healthy control. Among study group anti-SARS-CoV-2 IgG and IgA antibodies were detected subsequently in 30 (81.1%) and 28 (75.7%) of sera samples, and in 84,7% and 86,1% of breastmilk samples.
The prevalence and level of anti-SARS-CoV-2 IgG and IgA antibodies in serum were highly associated with former virus exposure. Lactoferrin concentrations in colostrum samples were closely related to virus infection. Higher levels were observed in colostrum samples from mothers with confirmed SARS-CoV-2 infection when compared to pre-pandemic control samples. Moreover colostrum obtained from mothers with active infection exhibited the highest concentrations of lactoferrin when compared to the post infection and control samples.

Conclusion: Breastmilk is a source of specific antibodies that allow breastfeeding infants to acquire passive immunity against the COVID-19. Among bioactive compounds of human milk, lactoferrin known for its potent immunological properties, additionally enhance the infant's defense mechanisms.

None declared

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EVALUATING PRESEPSIN AS AN EMERGING BIOMARKER FOR NEONATAL SEPSIS: A SINGLE-CENTER COMPARATIVE PILOT STUDY OF CONVENTIONAL SEPSIS INDICATORS

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INTRODUCTION: Neonatal bacterial sepsis remains a serious health challenge with complex diagnostics. Typically, diagnosis relies on a suite of laboratory indicators, including C-reactive protein (CRP), procalcitonin (PCT), and white blood cell count (WBC), with blood culture serving as the definitive standard. Presepsin, a soluble glycoprotein fragment (sCD14-ST) produced following the binding of bacterial lipopolysaccharide to phagocyte receptors and subsequent activation of plasma protease cascades, is emerging as a specific and early biomarker for sepsis.

MATERIAL AND METHODS: Conducted at the Pediatric Clinic Ljubljana, this pilot study sought to evaluate the diagnostic value of presepsin relative to traditional markers (CRP, PCT, and WBC). The study's objective was to determine whether presepsin could facilitate earlier detection of bacterial infections and predict their severity. Presepsin levels were measured using the PATHFAST chemiluminescence-based immunological analyzer from 100 µL of whole blood, alongside determinations of CRP, PCT, and WBC. The study included eighteen neonates diagnosed with sepsis, categorized into culture-proven (N = 7) and culture-negative (N = 11) groups for analysis.

RESULTS: The median presepsin level was 740 ng/L in the culture-proven group versus 393 ng/L in the culture-negative group, showing no significant difference (p-value 0.537). The median CRP levels were 47 mg/L and 9 mg/L in the culture-proven and culture-negative groups, respectively (p-value 0.080). Median PCT values were 1.5 mcg/L in culture-proven cases and 0.17 mcg/L in culture-negative cases (p-value 0.052). Similarly, median WBC counts were 11.5x10^9/L and 9.5x10^9/L, respectively (p-value 0.931).

CONCLUSIONS: Although higher median levels of presepsin, CRP, and PCT were noted in the culture-proven group, none of these differences reached statistical significance. This finding highlights the inherent challenges in diagnosing neonatal sepsis and suggests that reliance on a single biomarker may be insufficient. The results underline the need for combining multiple biomarkers or developing new diagnostic criteria to enhance clinical accuracy. Further research involving larger sample sizes and additional clinical variables is essential to fully determine presepsin's utility and possibly developing a quicker, more effective diagnostic tool to improve outcomes in this vulnerable population.

None declared.