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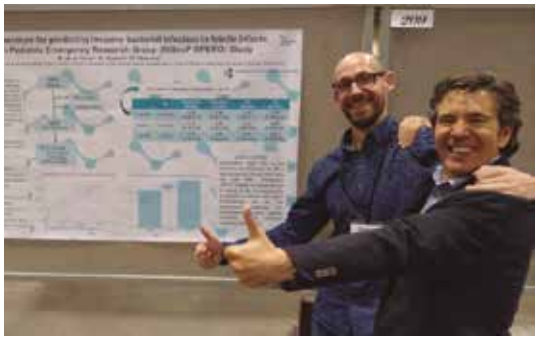
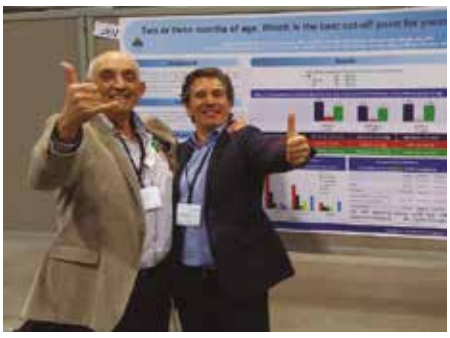




INDEX

SÁBADO 5

THE RUSSELL W. CHESNEY SYMPOSIUM: COMMON AND STILL UNRESOLVED ISSUES IN URINARY TRACT INFECTIONS

Simposio dedicado a la memoria de uno de los mayores expertos en ITU de los EEUU, en el que se hizo un repaso a la investigación más reciente en esta área. A destacar los trabajos sobre la utilidad del HD5 urinario como biomarcador, el rendimiento de la ecografía potenciada con contraste IV como alternativa al DMSA, y la presentación de la UTICalc de Shaikh y Hoberman, una aplicación on line (https://uticalc.pitt.edu) que nos predice la probabilidad de que nuestro paciente padezca una ITU en base a los hallazgos clínicos y analíticos.

RESPIRATORY VIRUSES: ADVANCES AND CHALLENGES IN DIAGNOSIS

Sesión de la Sociedad de Infectología Pediátrica, que repasó el uso y utilidades de los test de detección de virus respiratorios en la urgencia, la hospitalización y la unidad de Cuidados Intensivos. Los datos mostraron un panorama poco positivo en los EEUU, con gran uso de estas pruebas en los tres niveles, sin que modifiquen el manejo de los pacientes ni acorten la duración de los tratamientos antibióticos ni de los ingresos. El mensaje principal fue reservar estos tests para aquellos pacientes en los que el resultado vaya a modificar la actitud (< 3 meses, inmunodeprimidos, sospechas de gripe en pacientes de riesgo, situaciones de pandemia, etc)

SESIÓN POSTERS

PREVALENCE OF RESPIRATORY VIRAL INFECTIONS IN FEBRILE YOUNG INFANTS WITH ELEVATED BLOOD BIOMARKERS. A PILOT STUDY

Estudio presentado por Roberto Velasco (Rio Hortega. Valladolid) analizando el valor de testar para infección viral en seleccionados lactantes febriles menores de 3 meses de edad.

Background

In 2014 the step-by-step (Mintegi et al, Emerg Med J.), a new approach for management of febrile infant, was published. This approach tried to safely rule out invasive bacterial infections (bacteremia and bacterial meningitis), showing high sensitivity, but low specificity. It is known that some viruses may cause elevation of blood biomarkers, so it is possible that a significant proportion of false positive of the approach due to elevated biomarkers might be infections due to these viruses, indeed.

Objective

Main objective of the study was to analyze if the infection by certain respiratory viruses may cause false positives due to blood biomarkers elevation in step-by-step approach.

Design/Methods

This was a prospective, observational, multicenter, cohort study, that included febrile infants ≥38ºC, between 22 and 90 days old, in which the presence in nasopharyngeal swab of a respiratory virus will be determined by polymerase chain reaction (PCR) [Luminex NxTAG Respiratory Panel (Luminex, Austin TX, USA)]. Patients with an altered blood level of C-reactive protein (CRP), absolute neutrophils count (ANC) or procalcitonin (PCT) were included in study group. Blood biomarkers were considered as altered according as cut-off points determined in step-by-step approach (CRP >20 mg/L; PCT≥ 0.5 ng/ml; ANC >10000 cel/ml). Those with normal biomarkers were considered as control group. Differences between groups in categorical variables were analyzed with chi square test.

Results

In the period of study, 55 patients were included. The mean age was 50.7 days (SD 18.7), and 32 (58.2%) were male. The mean temperature was 38.4ºC (SD 0.37), with a median time of evolution of the fever of 4 hours (IQR 1-10). It was the first febrile episode in life for 48 (87.3%) patients. Ten patients (18.2%) had alterations of biomarkers (ANC, 2

Table 1.			
	Study group (n=10)	Control group (n=45)	p
Enterovirus/Rhinovirus	5 (50%)	14 (31.1%)	0.256
Flu (A/H3N2)	1 (10%)	9 (20%)	0.458
Adenovirus	0 (0%)	2 (4.4%)	0.497
Metapneumovirus	2 (20%)	0 (0%)	0.02
Coronavirus	0 (0%)	2 (4.4%)	0.497
Bocavirus	1 (10%)	1 (2.2%)	0.235
Parainfluenza 4	1 (10%)	0 (0%)	0.032

patients; CRP, 4 patients; PCT, 7 patients). Viral PCR results for each group are shown in table 1.

The study has several limitations. The first one was the small size of the sample. A second one was that PCR reactive did not allowed to differentiate between Enterovirus and Rhinovirus.

Conclusion(s)

Some respiratory viruses might elevate blood biomarkers level. Further research is needed to determine which ones are associated with false positives of step-by-step approach. Point-of-care tests for these viruses may be useful to improve specificity of Step-by-step approach (Table 1).

ADVERSE EFFECTS OF IV N-ACETYLCYSTEINE FOR ACETAMINOPHEN TOXICITY IN PEDIATRIC PATIENTS: A RETROSPECTIVE CHART REVIEW

Estudio presentado por Sarah Sylveste (UAMS. Little Rock, Arkansas, United States) que cuestiona la elevada prevalencia de reacciones anafilactoides (se estimaban en torno al 17%) tras administrar la NAC IV.

Background

Acetaminophen (APAP) is commonly used in the pediatric population and is safe and effective when administered at the recommended doses; nonetheless, it is also one of the most reported causes of acute medication poisoning in the United States. N-acetylcysteine (NAC), given orally or intravenously, remains widely accepted as the antidote of choice. Oral NAC has significant issues with administration, and the IV form has replaced the oral form in many institutions. IV NAC's adverse reactions, ranging from nausea and vomiting to anaphylactoid reactions, have frequently been reported in the adult literature, with an increased frequency in asthmatics. However, there remains little data regarding adverse effects of IV NAC specific to the pediatric population.

Objective

An institiutional review of patients receiving IV NAC for APAP poisoning was performed to review the occurrence of these commonly reported adverse reactions in a pediatric population and to identify potential risk factors associated with these reactions in order to improve patient safety.

Design/Methods

A retrospective chart review of patients at Arkansas Children's Hospital receiving IV NAC for acute APAP poisoning from December 2010 to July 2016 was performed; patients between the ages of 0 to 17 years were included. Demographics, duration of IV NAC therapy, co-ingested substances, laboratory values, and adverse reactions during IV NAC administration were recorded using a standardized form.

Results

A total of 50 patients received IV NAC for acute APAP poisoning during the selected time frame. The median patient age was 15 years (0.5 to 17 years); thirteen were male and 37 were female. Four had a medical history of asthma; none of these patients had reported adverse reactions. Five of the 50 patients experienced adverse effects of nausea and/or vomiting; none were reported to have anaphylactoid reactions. Patients experiencing adverse reactions had higher initial APAP levels and peak AST and ALT levels than those without adverse reactions.

Conclusion(s)

From this QA analysis, IV NAC for acetaminophen toxicity in a pediatric population was well tolerated, with no anaphylactoid reactions and lower incidence of nausea and vomiting than reported in the literature. In the adverse events group, patients had significantly higher liver enzyme levels than the non-adverse event group. These findings will be further studied to evaluate whether these events are directly related to IV NAC versus the severity of APAP-induced liver toxicity.

DOMINGO 6

SESIÓN COMUNICACIONES ORALES 1

PROCALCITONIN AND CLINICAL OUTCOMES IN PEDIATRIC COMMUNITY-ACQUIRED PNEUMONIA

Primero de los varios estudios presentados por Todd Florin (Cincinnati Children's Hospital Medical Center. Cincinnati, Ohio, United States) en el PAS 2018. En dos de ellos, que se exponen a continuación, se analiza el valor de los biomarcadores en la neumonía y en las infecciones respiratorias bajas. Todd es el investigador principal de un estudio multicéntrico internacional que se iniciará en Otoño de 2018 para identificar factores de severidad en la neumonía adquirida en la comunidad.

Background

Although community-acquired pneumonia (CAP) is one of the most frequent and costly reasons for hospitalization in children, limited tools exist to predict disease severity and risk stratify children with CAP. Procalcitonin (PCT) may be associated with disease severity; however, data are conflicting.

Objective

To determine the ability of PCT to predict severe clinical outcomes in children with CAP.

Design/Methods

Prospective cohort study of children age 2 months to 18 years, diagnosed with CAP at one of 6 children's hospitals participating in an ongoing study (Children's Hospital's Initiative for Research in Pneumonia (CHIRP)) between November 1, 2015 and November 30, 2017. Children were excluded if they had any complex chronic conditions. The primary outcome was disease severity, classified as mild (discharge home from ED), moderate (hospitalized, but not severe) and severe (receipt of non-invasive positive pressure ventilation (NIPPV), intubation, chest drainage, bacteremia, or ICU admission).

Results

Among 334 children (median age 5.2 years (IQR, 2.1,9.3), 46% female), 28.1% (n=94) had mild pneumonia, 58.1% (n=194) had moderate pneumonia, and 13.8% (n=46) had severe pneumonia. Median PCT levels increased with increasing severity (mild 0.5 ng/mL (IQR, 0.5, 0.5); moderate 0.5 ng/mL (IQR, 0.5, 1.4); severe 2.1 ng/mL (IQR, 0.5, 8.6) ($p<0.0001$; Figure). No child with severe outcomes had PCT concentrations below the level of detection of PCT (<0.07 ng/mL). Median PCT concentrations were significantly higher in those who received supplemental oxygen, NIPPV, intubation, chest drainage and ICU admission (Table). Increasing hospital length of stay was associated with increasing PCT concentrations ($r=0.28$, $p<0.001$), with 87% of children hospitalized >48 hours having a PCT>0.5 ng/mL.

Conclusion(s)

PCT concentration is associated with disease severity in children with CAP in a graded fashion. PCT may be useful in risk stratifying children with CAP, with potential to improve treatment and site-of-care decisions.

BIOMARKERS PREDICT DISEASE SEVERITY IN PEDIATRIC LOWER RESPIRATORY TRACT INFECTIONS

Segundo estudio presentado por Todd Florin

Background

C-reactive protein (CRP), procalcitonin (PCT) and midregional proadrenomedullin (proADM) are associated with disease severity in adults with lower respiratory tract infections (LRTI). Studies examining these biomarkers to predict severity and clinical outcomes in children are sparse.

Objective

To determine the association between biomarkers and disease severity in children who present with LRTI.

Design/Methods

Catalyzing Ambulatory Research in Pneumonia Etiology & Diagnostic Innovations in Emergency Medicine ("CARPE DIEM") is a prospective cohort study of children who presented to the emergency department (ED) with LRTI between July 2013 and December 2017. Eligible patients included previously healthy children age 3 months to 18 years with signs and symptoms of LRTI who received a chest radiograph (CXR) for suspicion of community-acquired pneumonia (CAP). Biomarkers were measured only in children

with focal findings on CXR in the ED. The primary outcome was disease severity: mild (discharged home), moderate (hospitalized, but not severe) and severe (ICU length of stay (LOS)>48 hours, chest drainage, severe sepsis, non-invasive positive pressure ventilation, intubation, vasoactive infusions, death). Biomarkers were obtained at the time of presentation to the ED, prior to the occurrence of clinical outcomes.

Results

Of 1,133 children with LRTI (mean age 4.9 years (SD 4.4), 54.9% male), 50.2% (n=569) were mild, 46.2% (n=523) were moderate, and 3.6% (n=41) were severe. CRP, PCT and proADM were significantly elevated in children with severe disease compared with mild and moderate (Table 1). PCT and proADM were significantly elevated in hospitalized children. Only proADM was statistically associated with respiratory support, ICU admission, and prolonged LOS. Increased proADM was associated with the largest odds for severe disease (OR 23.79, 95%CI, 5.96, 111.97) and had the best ability to discriminate those developing severe vs. non-severe disease [Area under the ROC: 0.8 (95%CI 0.71,0.89)] (Table 2). Combinations of CRP, PCT, and proADM did not appear to discriminate any better than proADM alone.

Conclusion(s)

CRP, PCT and proADM are elevated upon presentation to the ED in children with LRTI who develop severe disease. ProADM is most strongly associated with disease severity. These biomarkers offer the potential to rapidly and objectively risk stratify children with LRTI in the ED.

FACTORS ASSOCIATED WITH ADVERSE OUTCOMES AMONG INFANTS <60 DAYS OLD WITH INVASIVE BACTERIAL INFECTIONS

Un estudio multicéntrico de Pruitt et al, que busca factores de riesgo de complicaciones en lactantes febriles menores de 60 días con IBI. Sus resultados muestran una mayor tasa de complicaciones como muerte, secuelas neurológicas o necesidad de ventilación mecánica o drogas vasoactivas en lactantes con antecedente de prematruridad, mal aspecto a su llegada a urgencais o desarrollo de meningitis bacteriana.

Background

Literature is sparse on outcomes of young infants with bacteremia and/or bacterial meningitis (invasive bacterial infections [IBI]).

Objective

To examine factors associated with adverse outcomes of infants ≤60 days old with IBI.

Design/Methods

We conducted a retrospective cohort study of infants ≤60 days old with growth of pathogenic bacteria from blood and/or cerebrospinal fluid culture sent from the emergency departments (EDs) of 11 children's hospitals (July 1, 2011-June 30, 2016). Medical records were reviewed to obtain demographic, clinical, laboratory, treatment, and outcomes data. Concordant empiric antimicrobial therapy was defined as in vitro susceptibility to antimicrobials received within 12 hours of arrival at the index ED visit. Thirty-day adverse outcomes were defined as 1) death, 2) neurologic sequelae, 3) mechanical ventilation, 4) receipt of vasoactive medications, or 5) surgical intervention. Mixed-effects logistic regression was used to determine factors associated with 30-day adverse outcomes.

Results

Four hundred forty-two infants (233 [52.7%] <28 days old) met inclusion criteria: 366 (82.8%) with bacteremia without meningitis and 76 (17.2%) with bacterial meningitis (51 with concomitant bacteremia). Seventy-eight (17.7%) infants had >1 adverse outcome at 30 days, including 33/76 (43.4%) with meningitis vs. 45/366 (12.3%) with bacteremia without meningitis (31.1% difference, 95% CI 19.9%-42.7%). Twenty-seven infants did not receive empiric antimicrobials, with all except one documented to have subsequently received treatment (this one infant had documented follow-up and no adverse outcome). Age <28 days, prematurity, ill-appearance at presentation, and bacterial meningitis (vs. bacteremia without meningitis) were associated with higher odds of 30-day adverse outcomes (Table 1). Adverse outcome type varied based on empiric antimicrobial concordance (Table 2), with the overall proportion of infants with adverse outcomes being similar for those who received concordant empiric antimicrobials (71/394, 18.0%) vs. discordant or no empiric antimicrobials (5/42, 11.9%) [6.1% difference, 95% CI -7.4-14.0%].

Conclusion(s)

Younger age, prematurity, ill-appearance, and the presence of bacterial meningitis may portend worse outcomes for infants ≤60 days old with IBI. These factors may herald the need for more extensive initial evaluation and treatment of young infants with suspected IBI. Studies are needed to determine the

association of empiric antimicrobial concordance with adverse outcomes.

C6 ENZYME IMMUNOASSAY FOR THE INITIAL MANAGEMENT OF CHILDREN PRESENTING TO THE EMERGENCY DEPARTMENT WITH ACUTE ARTHRITIS

Excelente studio de Lise Nigrovic (Boston Children's Hospital. Boston, Massachusetts, United States) avanzando en el diagnóstico de la enfermedad de Lyme y sugiriendo la posibilidad de evitar la artrocentesis.

Background

In Lyme disease endemic areas, the emergency department (ED) management of children with arthritis can be challenging as diagnostic tests take several days to return results, leading to potentially unnecessary invasive procedures.

Objective

To examine the role of the currently approved C6 peptide enzyme immunoassay (EIA) test to guide initial management for children with arthritis.

Design/Methods

We enrolled children with acute arthritis undergoing evaluation for Lyme disease who presented to a participating Pedi Lyme Net ED between June 2015 and November 2017 and performed a C6 EIA test for all study patients. We defined septic arthritis as a positive synovial fluid culture or a positive blood culture with synovial fluid pleocytosis (WBC > 50,000 cells/mL) and Lyme arthritis as positive two-tiered serology (a positive or equivocal C6 EIA followed by a positive supplemental immunoblot interpreted using standard criteria). We report the sensitivity and specificity of the C6 EIA for the diagnosis of Lyme arthritis.

Results

We enrolled 542 children with arthritis of which 520 (95.9% enrolled) had a C6 EIA test performed. Of these, 134 children (25.8%) had Lyme arthritis and 7 (1.3%) had septic arthritis. A positive or equivocal C6 EIA had a sensitivity of 100% [134/134; 95% confidence interval (CI) 97.2 - 100%) and a specificity of 94.0% (363/386; 95% CI 91.2 - 96.0%) for Lyme arthritis. None of the 157 children with a positive or equivocal C6 EIA had septic arthritis, although 51 (32.5%) underwent diagnostic arthrocentesis.

Conclusion(s)

In Lyme disease endemic areas, a C6 EIA could be used to guide initial clinical decision-making, without misclassifying children with septic arthritis.

ONDANSETRON ADMINISTRATION TO NON-DEHYDRATED CHILDREN WITH ACUTE GASTROENTERITIS-ASSOCIATED VOMITING, IN EMERGENCY DEPARTMENTS IN PAKISTAN: A RANDOMIZED, BLINDED, PHASE 3, SUPERIORITY TRIAL

Excelente estudio presentado por Stephen Freedman que cuestiona el uso de ondansetrón en pacientes que exclusivamente presentan vómitos.

Background

In high-income countries, vomiting often impedes oral rehydration therapy, leading to intravenous rehydration fluid administration to children with acute gastroenteritis. Ondansetron administration reduces vomiting and intravenous fluid administration in this population. Although several clinical trials have evaluated ondansetron use in low and middle income countries, they have been small, single center, and have not focused on intravenous rehydration use.

Objective

To determine if the administration of a single dose of oral ondansetron to children with vomiting secondary to acute gastroenteritis without evidence of dehydration reduces the probability of receiving intravenous fluid rehydration, compared to those given oral placebo.

Design/Methods

We conducted a 2-hospital, double-blind, placebo-controlled, emergency department-based, randomized trial. Eligible children were aged 0.5 to 5.0 years, without dehydration, and had diarrhea and ?1 episode of vomiting within 4 hours of arrival. Patients were assigned (1:1), via an internet-based randomization service, using a stratified, variable block randomisation scheme, to receive a single dose of oral ondansetron or placebo. The primary endpoint was intravenous rehydration (administration of ?20 ml/kg over 4 hours of an isotonic fluid) within 72 hours of randomisation.

Results

From July 3, 2014, to January 12, 2017, 626 children were randomized. Intravenous rehydration was provided to 10.8% (34/314) and 10.3% (27/312)

of children administered placebo and ondansetron, respectively (OR: 0.95; 95% CI: 0.56, 1.59; P=0.83). A regression model fitted with treatment group and adjusted for antiemetic administration and vomiting frequency in the preceding 24 hours, yielded similar results; OR=0.95; 95% CI: 0.57, 1.59; P=0.85. There was no evidence of interaction between treatment group and age (P=0.97), ≤3 diarrhoeal stools in the preceding 24 hours (P=0.98) or ≤3 vomits in the preceding 24 hours (P=0.55). During the 4-hour study observation period, 24.0% (75/314) and 19.6% (61/312) of children in the placebo and ondansetron groups vomited, respectively; OR: 0.77; 95%CI: 0.53, 1.13; P=0.19.

Conclusion(s)

Ondansetron administration did not significantly reduce intravenous rehydration use, suggesting that in children without dehydration, ondansetron administration does not significantly alter the disease course and should not be administered to this group of children.

SESIÓN COMUNICACIONES ORALES 2

CLINICAL PREDICTION RULE FOR DISTINGUISHING BACTERIAL FROM ASEPTIC MENINGITIS IN CHILDREN WITH CEREBROSPINAL FLUID PLEOCYTOSIS

Estudio presentado por Santi Mintegi (Cruces University Hospital. Bilbao, Basque Country, Spain) que plantea el incremento del rendimiento del BMS en niños con pleocitosis.

Background

The Bacterial meningitis score (BMS) accurately identifies children with pleocytosis at low or high risk of bacterial meningitis. To include new biomarkers (procalcitonin [PCT], C reactive protein [CRP]) may be helpful to design a more accurate decision support tool.

Objective

To design a more accurate decision support tool to distinguish bacterial from aseptic meningitis in children with cerebrospinal fluid pleocytosis.

Design/Methods

We carried out a multicenter, retrospective cohort study including children aged 29 days to 14 years who presented with cerebrospinal fluid pleocytosis at 25 Spanish participating emergency departments (ED) between 2011 and 2016 to develop a Meningitis Score for ED (MSE). We excluded critically ill patients, those non-previously healthy, those with purpura and those who had received antibiotics previously. To select the variables of the score we included those with an area under the RUC curve higher than 0.90; to select the optimal cut-off point we used the Youden index; finally, variables independently associated with bacterial meningitis were ranked according to the magnitude of the beta-coefficient.

Results

We included 819 children with pleocytosis (758 aseptic meningitis, 61 bacterial meningitis) The MSE was developed attributing 3 points for serum PCT (>1.2 ng/mL), 2 point for CSF protein (>80mg/dL) and 1 point for serum CRP (>40 mg/l) and CSF absolute neutrophil count (>1000 cells/mm3). The negative predictive value of a MSE value of 2 or higher for bacterial meningitis was 100% (95% CI 99.5-100; vs 99.3%; 95% CI 98.4-99.7% of a BMS value of 2 or higher). Of the 758 children diagnosed with aseptic meningitis, 639 had a MSE value = 0 (84.3%, 95% CI 81.5-86.7; vs 390, 51.4%, 95% CI 47.9-55.1% children with BMS=0).

Conclusion(s)

The MSE accurately distinguishes bacterial from aseptic meningitis in children with cerebrospinal fluid pleocytosis. To include PCT and CRP increases the performance of the BMS.

SESIÓN POSTERS

SCREENING PEDIATRIC PATIENTS IN NEW-ONSET SYNCOPE (SPINS) STUDY

Estudio presentado port Ayush Gupta (William Beaumont hospital. Royal Oak, Michigan, United States) que abre la puerta a seleccionar los pacientes con síncope a los que se debe practicar en ECG.

Background

Syncope is a common presentation in pediatric population. Life-threatening conditions such as hypoglycemia, heat stroke, anaphylaxis, cardiac arrhythmia, or structural cardiac disease causing syncope are relatively rare. Patients who present with an initial syncopal episode should be screened for cardiac symptoms. No strong evidence exists for which precise historical features associated with syncope of cardiac origin in pediatric patients.

Objective

To estimate the frequency of history findings with cardiac syncope and compare with vasovagal syncope.To identify risk of missing cardiac diagnosis in patients presenting with typical vasovagal syncope.

Design/Methods

Retrospective chart review from January 2006 to April 2017 of children aged 5-18 years presenting to the emergency department with a discharge diagnosis of syncope was done. Target population was all patients with first episode of syncope and a documented EKG. Patients with head trauma, drug intoxication, current pregnancy and any endocrine problem were excluded. We identified patients with cardiac causes of syncope by abnormal EKG, and compared specific history findings with those without cardiac etiology. We then identified the risk of a cardiac diagnosis in patients with absent history findings such as: cardiac history, chest pain, palpitations, syncope with exercise, and absence of prodrome.

Results

Of the total 4115 visits, 2063 patients (50.1%) met the inclusion criteria for the study. The mean age was 13.4 year and 63% of them were females. 83 patients (~4%) patients were identified with cardiac etiology. The remaining were determined to be of vasovagal origin. Statistical significance for cardiac etiology was found when syncope occurred with a history of exercise ($p=0.038$), chest pain ($p=0.043$), palpitations ($p<0.0001$) and prior cardiac history ($p=0.003$), as compared to vasovagal etiology. No significance was found with absence of prodrome ($p=0.15$) and a family history of sudden cardiac death ($p=1.00$). 1611 patients were identified with absence of above significant history findings; only 6 patients were identified with borderline prolonged QTc interval and the rest had a normal ECG.

Conclusion(s)

To our knowledge this study is the largest pediatric cardiac syncope study detailing the specific history findings associated with it. Using the screening questions, it can identify cardiac causes of syncope as well as potentially decreasing EKG testing, echocardiogram and further cardiology follow-up, expediting ED flow, reducing healthcare costs and anxiety among families.

CHILDREN WITH COMMUNITY-ACQUIRED PNEUMONIA (CAP) DEMONSTRATE A UNIQUE PATTERN OF COLONIZATION WITH POTENTIALLY PATHOGENIC BACTERIA (PPB)

Un trabajo de Juergensen et al, que incluye datos de varios hospitales del estado de Ohio, y que muestra como los pacientes con neumonía adquirida en la comunidad presentaron colonización nasofaríngea por S. pneumoniae, H. influenzae y Moraxella catarrhalis con mayor frecuencia que los controles. Los pacientes colonizados por Moraxella necesitaron, además, soporte ventilatorio con más frecuencia.

Background

Pneumonia is the leading cause of mortality in children under five worldwide. Data suggests that nasopharyngeal (NP) colonization with potentially pathogenic bacteria (PPB) may serve as a predictor for disease occurrence and severity.

Objective

To determine if NP colonization patterns of PPB are associated with clinical outcomes in children with CAP.

Design/Methods

A multicenter, prospective cohort study enrolled children <18 years of age with CAP (Pts) and age-

Table 1.

	S. pneumoniae n (%)	H. influenzae n (%)	M. catarrhalis n (%)	S. aureus n (%)
Patients (n=326)	140 (43%)	136 (42%)	122 (37%)	86 (26%)
Healthy Controls (n=47)	10 (21%)	10 (21%)	3 (6%)	14 (30%)
P value	0.004*	0.007*	0.0001*	0.60
Outpatients (n=54)	21 (39%)	22 (41%)	24 (44%)	11 (20%)
Inpatients (n=272)	119 (44%)	114 (42%)	84 (36%)	75 (28%)
P value	0.46	0.88	0.36	0.31
RS (n=137)	66 (48%)	58 (42%)	61 (45%)	38 (28%)
No RS^ (n=189)	74 (39%)	78 (41%)	61 (32%)	48 (25%)
P value	0.11	0.91	0.03*	0.70

*statistically significant according to Fisher's exact test; ^includes outpatients and inpatients; RS = Respiratory Support

matched healthy controls (HC) at 6 Children's hospitals in Ohio. Contemporary HC were recruited from the Columbus community. NP bacterial swabs were collected at enrollment and analyzed for four PPB: S. pneumoniae, S. aureus, H. influenzae, and M. catarrhalis by quantitative real time PCR. Frequency and bacterial load (log10 copies/mL) of PPB colonization was analyzed according to disease severity defined as: a) need for hospitalization b) hospital length of stay (LOS) and c) receipt of respiratory support. Chi-square and Fisher's exact test were used to compare Pts to HC.

Results

Over 2 years, 326 children with CAP (median age 5.3 yrs [IQR: 2.1-8.95]) and 47 HC (median age 7 yrs [IQR 3.7-13.9]) were enrolled. Overall, children with CAP were more frequently colonized with PPB than controls (77% vs 57%; p <0.01). Colonization was higher in Pts vs HC with S. pneumoniae (43% vs 21%; p<0.01), H. influenzae (42% vs 21%; p<0.01), and M. catarrhalis (37% vs 6%; p<0.01), with no differences in S. aureus colonization between groups. Frequency of colonization with PPB was similar between outpatients and inpatients with CAP, and only S. pneumoniae bacterial loads were significantly higher in outpatients vs inpatients (median: 5.24 vs 3.77; p=0.004). Among inpatients, frequency of NP colonization with M. catarrhalis, but not with H. influenzae or S. pneumoniae, was higher in those who required respiratory support vs those who did not (45% vs 32%; p=0.03). Children who required respiratory support also demonstrated higher bacterial loads only for H. influenzae (median: 4.65 vs 3.6; p=0.02). There were no statistical associations between PPB colonization or bacterial loads with LOS.

Conclusion(s)

Children with CAP were more frequently colonized with S. pneumoniae, H. influenzae, and M. catarrhalis than HC, irrespective of hospitalization status. Furthermore, colonization profiles with Gram negative bacteria were associated with need for respiratory support (table 1).

LUNES 7

THE EMERGENCY DEPARTAMENT AS A BIOLOGICAL LABORATORY: BIOMARKERS AND PRECISION MEDICINE IN THE ACUTE CARE SETTING

Una excelente sesión acerca las posibilidades, mecanismos e implicaciones éticas de la obtención de muestras biológicas y desarrollo de biobancos en los servicios de Urgencias de Pediatría, a cargo de algunos de los principales investigadores norteamericanos.

Objectives: In this invited science session, we will explore the ED as a biological laboratory. The objectives are: 1. To explore the power of ED-based biorepositories, including best practices for specimen collection, processing, and storage 2. To examine current efforts in Emergency Medicine research that will set the stage for a precision medicine approach in the future of the acute care of ill and injured children 3. To understand the ethical issues involved in performing research involving biological specimens

Despite evidence suggesting that considerable heterogeneity exists among patients presenting with common diseases, a "one size fits all" approach is still the norm in pediatric acute care. Biomarkers and systems biology approaches, combined with advanced statistical and bioinformatics techniques, offer the ability both to provide accurate diagnosis as well as to tailor therapies to patients most likely to benefit (i.e. precision medicine). The Emergency Department (ED) is a unique laboratory to study novel diagnostics and therapeutics for acutely ill and injured children, allowing for data and specimen collection in the acute phase of illness, before definitive diagnoses have been made and treatments have been administered, in a broad population representing the full spectrum of disease severity. This session will begin with a discussion of the power of developing ED-based biorepositories, using Pedi Lyme Net as an example. Second, we will examine best practices in biorepository development with the Medical Director of a hospital biobank. Next, we will highlight current efforts in emergency medicine research using novel diagnostics to diagnose and manage infectious diseases, with a focus on the diagnosis of serious bacterial infections in young febrile infants and novel diagnostics for pediatric sepsis. We will conclude by examining ethical issues surrounding specimen collection and biorepository development in the ED setting.

- The Potential of Novel Diagnostics to Inform Emergency Department Therapy
  Todd Florin, Cincinnati Children's Hospital Medical Center
- Emergency Department as Laboratory: Developing a Biorepository in the Emergency Department
  Lise Nigrovic, Boston Children's Hopsital
- Challenges and Opportunities in Biorepository Development in the Emergency Department
  Florence Bourgeois, Boston Childrens Hospital
- Using Clinical and "Omic" Approaches to Advance Pediatric Sepsis Diagnostics in the Emergency Department
  Frances Balamuth, University of Pennsylvania Perelman School of Medicine and Children's Hospital of Philadelphia
- Transcriptomics to Improve the Diagnosis of Young Febrile Infants
  Nathan Kuppermann, UC Davis Health System
  Prashant Mahajan, University of Michigan
- Ethical Issues in Acute Care Biorepository Development
  Walton Schalick, University of Wisconsin
- Session Summary and Wrap-Up: Establishing Collaborations and Future Applications
  Todd Florin, Cincinnati Children's Hospital Medical Center

SESIÓN COMUNICACIONES ORALES 3

THE USE OF NON-MYDRIATIC OCULAR FUNDUS PHOTOGRAPHY (NMOFP) TO EVALUATE PATIENTS WITH HEADACHE IN THE PEDIATRIC EMERGENCY DEPARTMENT (PED)

Espectacular estudio de Yesha Patel (Children's Hospital of Pittsburgh of UPMC. Pittsburgh, Pennsylvania, United States) que describe la posibilidad de evaluar el fondo del ojo a través de un registro fotográfico en mayores de 5 años sin dilatar la pupila.

Background

Funduscopic exam via direct ophthalmoscopy (DO) is difficult to perform without pupillary dilation and patient cooperation. In contrast, NMOFP is sensitive and specific for diagnosing eye pathology in adults. However, there are limited studies with NMOFP as a screening or diagnostic tool in the PED.

Objective

Primary: Determine if patients age > 5 years presenting to the PED with headache can complete NMOFP.

Secondary: Evaluate if NMOFP improves Pediatric Emergency Medicine (PEM) physicians' ability and confidence level in interpreting funduscopic images compared to DO.

Design/Methods

One hundred patients > 5 years old presenting to the PED with headache were approached for enrollment. The treating PEM physicians completed both DO and NMOFP but were randomized as to which they completed first. After each exam, physicians completed a survey asking 1) the interpretation of their exam (normal, papilledema, or unsure) and 2) the confidence level in their interpretation graded by a likert scale of 1-5 (5=most confident). Groups were compared using the chi-square test.

Results

Ninety-nine patients were enrolled in the study; 94 were included in the analysis and 98% were able to complete NMOFP. Forty-seven patients were randomized to each group. Of the 47 in the DO-first group, PEM physicians interpreted 25 fundus exams as normal with a mean confidence level of 3.8 and were unsure for 22. PEM physicians then completed NMOFP for the same 47 patients; 42 exams were interpreted as normal with a mean confidence level of 4.7. Of the 22 unsure exams in the DO-first group, 21 were interpreted as normal via NMOFP. In the NMOFP-first group, 44 of 47 fundus exams were interpreted as normal, 1 as papilledema, and 2 were unsure. In 25 of the 44 normal NMOFP-first exams, PEM physicians could not visualize the fundi. In total, PEM physicians were able to visualize and interpret the funduscopic image in 47% (44/94) vs. 94% (88/94) of the patients after the DO and NMOFP examinations respectively ($p<0.01$). One patient was diagnosed with papilledema via NMOFP and ultimately diagnosed with Lyme meningitis.

Conclusion(s)

Pediatric patients 5 years and older presenting in the PED with headache are able to successfully complete NMOFP. PEM physicians' ability to visualize and confidently interpret funduscopic images via NMOFP is significantly greater when compared to DO. The superiority of NMOFP makes the funduscopic exam more accurate and thus more likely to impact patient management.

COMPETENCY BASED LEARNING OF PEDIATRIC MUSCULOSKELETAL RADIOGRAPHS

Esta comunicación de Michelle Lee y la siguiente de Charisse Kwan nos presentan el desarrollo de un programa de formación del personal sanitario del Hospital Sick Children de Toronto en interpretación de radiografías y ecografías mediante el uso de una plataforma web.

Background

Pediatric musculoskeletal (MSK) image interpretation has been identified as a knowledge gap among emergency medicine trainees.

Objective

The main objective of this study was to implement a validated on-line pediatric musculoskeletal (MSK) radiograph interpretation system with a performance-based competency endpoint into pediatric emergency fellowship programs and examine the number of cases needed to achieve a competency threshold of 80% accuracy, sensitivity and specificity. We further determined proportion who successful-

ly achieved competency in a given module and the change in accuracy from baseline to competency.

Design/Methods

This was a prospective cohort multi-center study. There were seven MSK radiograph modules, each containing 200-400 cases (demo-https://imagesim.com/course-information/demo/). Thirty-seven pediatric emergency medicine fellows participated for 12 months. Participants did cases until they reached competency, defined as at least 80% accuracy, sensitivity and specificity. We calculated the overall and per module median number of cases required to achieve competency, proportion of participants who achieved competency, median time on case, and the mean change in accuracy from baseline to competency.

Results

Overall, the median number of cases required to achieve competency was 76 (min 54, max 756).Between different body parts, there was a significant difference in the median number of cases needed to achieve competency, $p < 0.0001$ (Table 1). Proportions of those who started a module and completed it to competency varied significantly, and ranged from 32.4% in the ankle module to 97.1% in the forearm/hand, $p < 0.0001$. The overall median time on each case was 34.1 (min 7.6, max 89.5) seconds. The overall change in accuracy from baseline to competency was 13.5% (95% CI 12.1, 14.8), with the respective Cohen's effect size of 1.98. The change in accuracy was different between modules, $p = 0.001$ (Table 2), with post-hoc analyses demonstrating that the ankle/foot radiograph module had a greater increase in accuracy relative to elbow ($p=0.009$) and pelvis/femur ($p=0.006$).

Conclusion(s)

It was feasible for pediatric emergency medicine fellows to complete each learning pediatric musculoskeletal learning module to competency within approximately one hour, with the exception of the ankle module. Learners who completed the modules to competency demonstrated significant increases in interpretation skill.

CLIMBING THE LEARNING CURVE – TEACHING THE PEDIATRIC EMERGENCY PHYSICIAN HOW TO INTERPRET POINT-OF-CARE ULTRASOUND IMAGES

Background

Point-of-Care Ultrasound (POCUS) is rapidly being integrated into Pediatric Emergency Medicine (PEM), and image interpretation is an important component of this skill. Currently, PEM physicians often rely on case-by-case exposure and feedback by a POCUS expert physician to learn this skill; however, this may not be efficient, reliable or feasible. Thus, there is a pressing need to develop effective POCUS image interpretation learning and assessment tools.

Objective

We exposed PEM fellow and attending physicians to the deliberate practice of POCUS image interpretation for four POCUS applications [soft tissue, lung, cardiac and Focused Assessment Sonography for Trauma (FAST)] and determined the quantity of skill acquisition by deriving performance metrics and learning curves.

Design/Methods

This was a prospective cross-sectional study administered via an on-line learning and assessment platform. Images were acquired from a pediatric ED and each application contained 100 still/video images. Final diagnosis of each image was determined via the consensus of three PEM POCUS experts. PEM fellow and attending study participants were recruited from the USA and Canada and were required to complete the cases of at least one application. To derive reference standard performance metrics and to validate image interpretations, a unique set of five PEM POCUS experts completed each application.

Results

We enrolled 225 PEM physicians, 74 fellows and 151 attendings. Table attached details changes in accuracy, sensitivity and specificity per application and learner type. For all applications, the Cohen's d effect size was large at 0.87, and there was no difference between PEM attendings and fellows with respect to summary performance metrics (accuracy, $p= 0.29$; sensitivity, $p=0.13$; specificity, $p=0.92$). Final accuracy soft tissue, lung, cardiac, and FAST for all participants was 86.4%, 89.6%, 81.6%, 88.0%, respectively, and the corresponding accuracy of PEM POCUS experts for each application was 96.0%, 96.0%, 90.0%, and 93.0%. Learning curves show maximal learning gains (inflection point) up until 65 cases for soft tissue, 70 for FAST, 75 for lung, and 85 for cardiac (Figure).

Conclusion(s)

Deliberate practice of POCUS image interpretation was effective for ensuring broad domain coverage

Table 1.						
Module N participants	Percent Accuracy Initial (SD)	Percent Accuaracy Final (SD)	Percent Sensitivity Initial (SD)	Percent Sensitivity Final (SD)	Percent Specificty Initial (SD)	Percent Specificity Final (SD)
PEM FELLOWS						
Soft Tissue n=39	73.7 (10.1)	85.2 (8.6)	84.5 (11.8)	88.8 (10.5)	63.1 (15.6)	81.7 (11.7)
Chest n=34	79.4 (11.3)	90.9 (8.2)	79.1 (15.4)	87.7 (15.0)	80.0 (15.7)	93.3 (93.3)
Cardiac n=35	77.1 (10.2)	82.9 (11.8)	74.4 (15.8)	80.6 (18.8)	79.3 (11.8)	84.7 (13.7)
e-FAST n=32	78.8 (12.6)	84.1 (13.4)	77.8 (12.6)	83.1 (22.8)	78.6 (12.7)	85.2 (11.1)
PEM ATTENDINGS						
Soft Tissue n=81	75.4 (10.4)	87.0 (9.2)	84.6 (11.7)	89.8 (10.3)	65.6 (16.3)	84.7 (12.9)
Chest n=60	80.0 (13.2)	88.9 (9.4)	79.6 (16.2)	87.0 (14.3)	80.9 (16.9)	90.9 (10.7)
Cardiac n=63	72.5 (11.9)	81.0 (11.0)	68.9 (18.7)	81.3 (13.0)	74.6 (15.1)	81.3 (13.0)
e-FAST n=59	79.7 (10.9)	90.0 (6.9)	78.5 (16.4)	90.7 (10.4)	81.1 (13.5)	88.8 (11.6)

and predictable skill improvement. Specifically, there was a large learning effect after 100 case interpretations, and 65-85 case interpretations are needed to reach an accuracy threshold of approximately 85%.

QUALITY IMPROVEMENT: EMERGENCY MEDICINE

Excelente mesa de comunicaciones orales, sobre iniciativas de mejora de la calidad sobre diferentes temas. Destacamos tres de ellas por presentar una temática que nos es más cercana y porque además proponen actuaciones potencialmente aplicables en nuestro entorno. Pero más que el tema concreto, es la sistemática utilizada de mejora de la calidad para conseguir un cambio en la práctica clínica o disminuir los errores de medicación. Definir las áreas de mejora o "key drivers" para alcanzar el objetivo y las acciones concretas en cada área, aparecen como puntos básicos en esta estrategia.

CORTICOSTEROID ADMINISTRATION FOR PEDIATRIC ASTHMA BY PREHOSPITAL EMERGENCY MEDICAL PROVIDERS: A QUALITY IMPROVEMENT PROJECT

Lauren Riney et al. Cincinnati Children's Hospital Medical Center.

Background

Early corticosteroid administration in the emergency department (ED) decreases ED length of stay and hospitalization rates. Prehospital emergency medical services (EMS) providers have the opportunity to give corticosteroids prior to ED arrival. Our objective was to increase the proportion of children with asthma exacerbations receiving systemic corticosteroids in the prehospital setting using improvement methodology.

Design/Methods

Implementation of a new EMS protocol for administration of systemic corticosteroids to pediatric patients with asthma exacerbations in the prehospital setting started January 2016 in Southwest Ohio. To facilitate implementation of this protocol, our team theorized key drivers and tested interventions using plan-do-study-act cycles. (Figure 1) Interventions included construction of an easily accessible EMS protocol, provider knowledge of the protocol and steroid dosing, provider buy-in to the importance of steroids in the prehospital setting, accurate identification of eligible patients, and an empowered engaged EMS team. Data were extracted from electronic medical records to manually identify eligible patients 3-16 years of age transported by EMS to the Cincinnati Children's Hospital Medical Center ED with billing codes indicating an asthma exacerbation. Prehospital delivery of steroids to eligible patients was tracked over time using statistical process control charts.

Results

A total of 189 pediatric encounters were eligible to receive prehospital corticosteroids for asthma exacer-

bations between January 2016 and November 2017. A p-chart (Figure 2) was constructed to track the proportion of pediatric prehospital encounters that received corticosteroids out of all pediatric prehospital patients eligible for corticosteroids. Following implementation of a just-in-time educational resource card, special cause variation was demonstrated and the centerline was shifted to 37%.

Conclusion(s)

Improvement methodology successfully increased prehospital corticosteroid administration for pediatric asthma exacerbations. Addressing barriers to pediatric prehospital protocol implementation can be accomplished using quality improvement tools. Future work to improve application of this prehospital protocol will target high impact areas identified by construction of a pareto chart to understand reasons why the protocol is not applied to more eligible patients.

REDUCTION IN OUTPATIENT PRESCRIPTION ERRORS FROM THE EMERGENCY DEPARTMENT

Veena Devarajan et al. Boston Children's Hospital.

Background

Prescription errors are common in medicine and occur more frequently in children than adults. Academic pediatric emergency departments (PED) are especially vulnerable given high volume and acuity, weight-based dosing, and rotating trainees.

Objective

To perform a quality improvement (QI) initiative that reduces the rate of prescription errors in an academic PED by 20% over 9 months.

Design/Methods

We analyzed all prescription errors in our PED from 2015-2016 and created a Pareto chart and key driver diagram targeting areas with the greatest improvement opportunities. The top drugs with the most errors were specifically targeted for intervention (Figure 1). Change strategies included: changing the existing electronic medical record to provide electronic decision support through the use of indication specific prescription folders and simplification of antibiotic choices for each indication; increasing education to rotating trainees; raising prescription error awareness among ED staff; and providing feedback to prescribers for identified errors.

Prescription errors were defined as prescriptions with incorrect dosing, duration, or drug for indication. We used a combination of internal evidence-based and nationally published guidelines as references for appropriate dosing.

The outcome measure was reduction in rate of prescription errors, defined as number of errors in a month divided by total number of outpatient prescriptions. We also analyzed rate of prescription errors for the top error-prone prescriptions. Process measures were prescription folder utilization and trainee confidence in prescription writing. Balancing measures were ED length of stay (LOS) and provider perception of burden of the prescription writing process.

Statistical process control methodology was utilized to determine changes between pre- and post-intervention measures.

Results

After introduction of the QI initiative, the overall prescription error rate decreased from 0.86 (UCL 2.11, LCL 0) to 0.73 (UCL 2.08, LCL 0), a reduction of 15%. The rate for the most error-prone medications fell from 2 % (UCL 6.12, LCL 0) to 0.62% (UCL 3.04, LCL 0) (Figure 2), a reduction of 69%. There was no change in ED LOS or burden perception of providers.

Conclusion(s)

A QI initiative based on reorganization and simplification of electronic decision support tools as well as educational efforts surrounding prescription errors significantly decreased prescription errors in an academic PED.

REDUCING TIME TO ANTIBIOTIC ADMINISTRATION IN CHILDREN WITH POSSIBLE FEBRILE NEUTROPENIA

Beech BURNS. Oregon Health and Science University.

Background

Febrile neutropenia (FN) is a potentially life-threatening complication of chemotherapy in pediatric oncology patients. Prompt initiation of antibiotic therapy may minimize morbidity and mortality associated with this condition, and time to antibiotic (TTA) administration $<$ 60 minutes is used as a quality benchmark by many institutions.

Objective

Using Plan-Do-Study-Act (PDSA) cycles, we initiated a quality improvement project in the Pediatric Emergency Department (ED) designed to decrease TTA in pediatric patients with possible febrile neutropenia.

Design/Methods

This study was conducted in an academic pediatric ED with an annual volume of 15,000 visits between April 2015 and March 2017. TTA was defined as time elapsed from patient arrival to time of antibiotic administration. We examined the TTA process in component parts, the most significant of which were time to order antibiotics and time to prepare antibiotics in pharmacy. We employed three consecutive PDSA cycles. The first aimed to expedite time to placement of the antibiotic order shortly after patient arrival. The second intervention focused on expediting the preparation and delivery of feedback from pharmacy. The final cycle required collaboration between the ED, pharmacy, and informatics to build the capacity to place the antibiotic order prior to patient arrival. Adherence to these processes was monitored and reinforced through individual audit and feedback. Mean and corresponding 95% confidence intervals were calculated for key outcome measures.

Results

Each improvement cycle resulted in progressively decreased mean TTA, from 62.1 minutes in the month prior to the first cycle to 28.6 minutes the month following the final cycle. The percentage of patients receiving antibiotics in < 60 minutes increased from 78% to 100% during this period. Comparing the pre-intervention and post-intervention years, the overall mean TTA decreased from 62 (95% CI 54 to 70) minutes to 46 (95% CI 39 to 53) minutes and the percentage of patients receiving antibiotics in < 60 minutes increased from 65% (53 to 77) to 85% (78-92). Improvements were sustained in the maintenance period of the project, with mean TTA administration of 47 (43-51) minutes and 82% (76-93) of patients receiving antibiotics within our stated goal.

Conclusion(s)

Through a series of PDSA cycles, we decreased TTA and increased the percentage of FN patients receiving antibiotics in < 60 minutes.

HOSPITAL MEDICINE I: CLINICAL CARE

DURATION OF PARENTERAL ANTIBIOTIC THERAPY IN YOUNG INFANTS WITH BACTEREMIC URINARY TRACT INFECTIONS

Un trabajo multicéntrico presentado por Sanyukta Desai, del Cincinnatti Children's, que muestra que los lactantes febriles con ITU bacteriémica que recibieron tratamiento antibiótico IV durante menos de 7 días no tuvieron peor evoución ni mayor tasa de recurrencias que aquellos que recibieron pautas más largas, de 10 o 14 días IV.

Background

Infants with bacteremic urinary tract infections (UTI) often receive prolonged courses of intravenous (IV) antibiotics. Prior studies examining the safety of short course IV antibiotic therapy in infants <60 days old with UTI have excluded patients with concomitant bacteremia.

Objective

To describe the epidemiology of bacteremic UTI in young infants, and to determine the association between short course IV antibiotic therapy and clinical outcomes.

Design/Methods

We conducted a multicenter retrospective cohort study of infants <60 days old evaluated at 11 children's hospitals between 2011-2016. Infants with UTI who grew the same pathogen in blood and urine cultures were included. Infants who had meningitis, and infants who died or who were transferred prior to completion of IV antibiotic therapy were excluded. The exposure of interest was duration of IV antibiotic therapy; short course was defined as <7 days and long course as >7 days. Propensity scores, calculated using patient characteristics (Table 1) were used to determine likelihood of receiving long course IV antibiotics. We conducted matched analysis with propensity scores to evaluate association of antibiotic duration with recurrent UTI within 30 days of discharge, and mixed effects models with study site as random effect and adjustment for propensity scores for the outcomes of length of stay (LOS) and 30-day all cause readmission.

Results

In our cohort of 116 infants with bacteremic UTI, 58 (50%) infants received short course IV antibiotics. The proportion of infants who received short course IV antibiotics varied by institution (median 50%, range 10-81%).Infants who received long course IV antibiotics were more likely to be <28 days old, ill appearing, have bacteremia with an organism other than E. coli, or blood culture positivity lasting > 1 day (Table 1). Thirty-day UTI recurrence and readmission rates were sim-

ilar between long and short IV antibiotic course groups (Table 2). Adjusted mean LOS was longer in infants receiving long course IV antibiotic therapy (Table 2).

Conclusion(s)

Young infants with bacteremic UTI who received <7 days of IV antibiotic therapy did not have more recurrent UTIs or readmissions when compared to infants who received long course IV therapy. Short course IV therapy with early conversion to oral antibiotics should be considered in this population. Future studies should identify which sub-populations of infants with bacteremic UTI would benefit from longer courses of IV antibiotic therapy.

ABUNDANCE OF NASAL MORAXELLA IS INVERSELY RELATED TO RECURRENT WHEEZING IN A PROSPECTIVE COHORT STUDY OF INFANTS INITIALLY HOSPITALIZED FOR BRONCHIOLITIS

Interesante comunicación, con resultados aún preliminares, que sugieren que una mayor colonización con Moraxella en los pacientes con bronquilitis puede ser un factor de riesgo de desarrollo de sibilancias recurrentes en los siguientes tres años.

Background

Bronchiolitis is a known risk factor for recurrent wheezing and asthma, but no study has analyzed clinical, viral, and longitudinal microbiota data to further delineate this association.

Objective

Among infants hospitalized for bronchiolitis, to examine the relationship between nasal microbiota at hospitalization and 3 other time points to recurrent wheezing by age 3 years.

Design/Methods

We performed a 17-center, prospective cohort study of infants hospitalized for bronchiolitis in 2011-2014. Researchers collected clinical data, nasopharyngeal aspirates (NPA), and nasal swabs at hospitalization. Parents collected 3 nasal swabs: 3 weeks after hospitalization, and, when healthy, during summer and the year after hospitalization. We tested NPAs for 17 viruses using quantitative PCR. We sequenced 16S rRNA gene variable region 4 on the Illumina MiSeq platform for all nasal swabs. We used joint modeling, combining longitudinal and survival models, to analyze the association of longitudinal microbiota abundance with parent-reported recurrent wheezing by age 3 years. Per EPR3, 1 day and affected sleep.

Results

Of 921 infants in the cohort, 833 infants (90%) with a total of 2,064 nasal swabs met 16S rRNA quality control requirements. The median age at hospitalization was 3 months (IQR, 2-6 months), 60% were male, and 80% had no history of wheezing. The 2 most common viruses at hospitalization were respiratory syncytial virus (RSV) (82%), and rhinovirus (21%). At age 3 years, there was 90% follow-up and 32% of children had recurrent wheezing. In the joint model stratified at age 3 months, higher Moraxella abundance was associated with lower risk of recurrent wheezing (HR 0.28, $P<0.001$) even after inclusion in the survival model of maternal asthma (HR 1.72, $P<0.001$), RSV at hospitalization (HR 0.53 compared to non-RSV virus, $P<0.01$), and winter birth (HR 0.70, $P=0.02$).

Conclusion(s)

In the largest, most comprehensive prospective cohort of infants hospitalized with bronchiolitis, we found higher abundance of Moraxella in the nasal microbiota during infancy is associated with a lower rate of recurrent wheezing by age 3 years. These data support the heterogeneity of severe bronchiolitis and encourage further research on patient-specific interventions to improve clinical outcomes, including future risk of recurrent wheezing.

SESIÓN POSTERS

PREVALENCE AND RISK FACTORS FOR BURNOUT OF PEDIATRIC EMERGENCY MEDICINE FELLOWS

Interesante estudio basado en los resultados de 139 encuestas realizadas a MIR de Urgencias de Pediatría. El objetivo es identificar factores de riesgo que pueden contribuir al burnout en este colectivo. Encuentran una tasa de burnout del 30% y este es más frecuente en mujeres, solteros y divorciados. Proponen que cambios en el ambiente de trabajo y la disminución de la presión académica podrían reducir el problema. Aunque se trata de un entorno social y laboral diferente al nuestro, creo que obliga a la reflexión y a plantear iniciativas para prevenir y detectar el burnout entre los profesionales de urgencias y MIR de pediatría en España.

Background

Burnout among, Emergency Medicine (EM) physicians (57%) is significantly greater than Pediatricians (39%). Pediatric Emergency Medicine (PEM) providers are a unique population in that the majority have a prior pediatric training and then complete a fellowship focused on the emergency management. We sought to evaluate the prevalence and risk factors for burnout in PEM fellows.

Design/Methods

An e-mail survey was sent to US PEM fellowship programs. The Maslach Burnout Inventory (MBI) Health Services Survey information grades burnout with 22 items. Anonymous surveys were scored using the MBI subscales of emotional exhaustion and depersonalization. Scores of moderate to high in both emotional exhaustion and depersonalization were considered to have burnout. The data were compared to demographic information including fellowship year, gender and relationship status. Participants were also asked to list items in their life they felt were burnout contributors. The burnout rate was reported as a percentage with 95% confidence intervals (95% CI), based on the Agresti-Coull method. Associations between categorical variables and burnout were tested with Fisher's exact test. alpha = 0.05 (two tails).

Results

Of 463 PEM fellows, 146 responses were received (30% response rate) and 139 surveys were scored. Over half (65%) of respondents were female. The burnout prevalence of PEM fellows was 30.9% (95% CI, 24%-39%). The burnout rate was significantly (p=0.002) lower for males (13%) (95% CI, 6%-26%) than for females (39.8%) (95% CI, 30%-50%). Fellows who were single (50%) or divorced (66.7%) had significantly (p=0.008) higher rates of burnout compared to married (27%) fellows. Current training year was not a significant burnout risk. Major contributors to burnout were work environment (52.5%), academic responsibilities of fellowship (36%), schedule (35.3%), work life balance (33.8%) and career / occupational stress (33.1%).

Conclusion(s)

Women were more likely to suffer from burnout as well as fellows who were single or divorced. By addressing factors that contribute to burnout, such as work environment and the pressure of academic responsibilities during fellowship, one may be able to lessen burnout rates.

EPIDEMIOLOGY OF INVASIVE BACTERIAL INFECTION IN INFANTS < 60 DAYS TREATED IN EMERGENCY DEPARTMENTS

Estudio epidemiológico multicéntrico en hospitales USA, presentado por Christopher Woll, de Yale, en el que aportan la microbiología y sensibilidades antibióticos de 442 lactantes febriles de < 60 días de edad, registrados en un periodo de 5 años. Como en nuestros registros, Estreptococo B y E Coli, aunque con una mayor presencia del primero. Como dato más interesante encuentran que el 11% son resistentes a cefalosporinas de 3ª generación, por lo que proponen que se deben asociarse a ampicilina o aminoglucósidos, según se trate de meningitis o no. En nuestro entorno no disponemos del dato multicénctrico de sensibilidad a antibióticos presentado aquí, pero puede que no difiera mucho. Deben plantearse estudios o cambios en la estrategia antibiótica empírica en estos pacientes, si no se dispone de datos propios.

Background

Febrile infants <60 days old routinely undergo extensive diagnostic evaluation and often receive parenteral antibiotic therapy for suspected bacteremia and/or bacterial meningitis (invasive bacterial infection [IBI]). Understanding the epidemiology and antimicrobial susceptibilities of IBIs in these infants could inform optimal management, including the selection of empiric antimicrobials.

Objective

Our objective was to describe the pathogens and their antimicrobial susceptibilities in infants <60 days old with IBI.

Design/Methods

We identified infants <60 days old with IBI evaluated in the emergency departments (EDs) of 11 children's hospitals between 7/1/2011 and 6/30/2016 by querying each site's microbiology laboratory database or electronic medical record system for blood or cerebrospinal fluid (CSF) cultures positive for a bacterial pathogen. Medical records were reviewed to confirm the presence of a pathogen and to extract demographic, clinical, and laboratory data including in vitro antimicrobial susceptibilities. Bacteremia and bacterial meningitis were defined as growth of a pathogen from blood culture or from CSF culture, respectively.

Results

Of the 442 infants with IBI, 366 (82.8%) had bacteremia without meningitis, 51 (11.5%) had bacteremia with bacterial meningitis, and 25 (5.7%) had bacterial meningitis without bacteremia. Group B streptococcus was the most common pathogen identified (36.7%), followed by Escherichia coli (30.8%), Staphylococcus aureus (10.0%), and Enterococcus spp. (6.6%). Three infants had bacterial meningitis due to Listeria monocytogenes. Overall, 98.6% of infants with IBI had pathogens susceptible to a combination of ampicillin plus gentamicin and 89.4% had pathogens susceptible to third-generation cephalosporins (specifically, cefotaxime or ceftriaxone) alone. Among infants with bacterial meningitis, 98.6% had pathogens susceptible to ampicillin plus a third-generation cephalosporin and 91.8% had pathogens susceptible to third-generation cephalosporins alone.

Conclusion(s)

Nearly 11% of pathogens in infants <60 days old with IBI were resistant to third-generation cephalosporins. Combination therapy with ampicillin plus either gentamicin or a third-generation cephalosporin is a better choice than third generation cephalosporins alone for empiric antimicrobial treatment.

TWO OR THREE MONTHS OF AGE. WHICH IS THE BEST CUT-OFF POINT FOR YOUNG FEBRILE INFANTS?

Se trata de un estudio de Mintegi et al, de Cruces, sobre una población de 3281 lactantes < 3 meses con fiebre sin focalidad. Los autores encuentran que, aunque la prevalencia de infección bacteriana invasiva (1,1%) en el grupo de niños de 60 a 90 días es menor que en los más pequeños, hace necesario un abordaje no diferenciado de los de 30 a 60 días de edad. Esta aportación es importante, cuando existen muchos protocolos que ponen el punto de corte de la edad para el estudio del lactante febril en 60 días, lo que a día de hoy no parece ser un abordaje muy seguro.

Background

In febrile infants less than three months of age, an inverse relationship between infant age and serious bacterial infection (SBI) prevalence has been demonstrated, with a decline in both non-invasive and invasive bacterial infections (IBI). Currently, some guidelines focus on infants less than 3 months of age, meanwhile others focus on infants less than 2 months.

Objective

To compare the prevalence of IBI in febrile young infants less than 60 days of age and those between 61-90 days to assess the adequacy of systematically performing or not ancillary tests in both groups of infants.

Design/Methods

We carried out a prospective registry-based cohort study including all the infants <90 days with fever without a source (FWS) evaluated in a paediatric emergency department over a 14-year period (2003–2017). We compared the prevalence of SBI and IBI in febrile infants less than 60 days of age and those between 61 and 90 days.

Results

During the study period we registered 3281 infants younger than 90 days of age with fever without a source. Overall, 602 (18.3%) had a SBI: non-IBI 522 (15.9%) and IBI 80 (2.4%). Of the 921 infants between 61 and 90 days of age who were well appearing and did not show leucocyturia, 7 (0.8%, 0.3-1.5) had an IBI.

The distribution of the 80 IBI varied with the age of the infant.

Conclusion(s)

Although lower than in infants less than 60 days of age, the prevalence of IBI in infants between 61 and 90 days of age supports the recommendation for obtaining systematically urine and blood tests in this population. Larger studies are needed to assess if this recommendation is adequate for those infants 61-90 days of age who appear well and do not have leucocyturia.

DIAGNOSTIC ACCURACY OF PRESEPSIN IN INFANTS YOUNGER THAN 3 MONTHS WITH FEVER WITHOUT SOURCE: PRELIMINARY DATA

Este estudio multicéntrico presentado por Niccolò Parri, del Meyer (Florencia), muestra datos preliminares sobre el rendimiento de un nuevo biomarcador, para identificar infección bacteriana en el lactante febril. Aunque la muestra es pequeña los resultados parecen prometedores, con un rendimiento incluso superior a procalcitonina. Se trata de la presepsina y se presenta en un dispositivo "point of care". Son precisos estudios multicéntricos más amplios para poder establecer su rendimiento real.

Background

Febrile infants younger than 3 months are at high risk of invasive bacterial infections (IBIs) or serious bacterial infections (SBIs).

Available biomarkers are inadequate if used alone. The soluble CD14 subtype (Presepsin, P-SEP) was studied in the adult and neonatal setting as a promising biomarker for sepsis.

Objective

To evaluate the accuracy of P-SEP as biomarker for SBI and IBI in infants younger than 3 months presenting to the Pediatric Emergency Department (PED) for fever without source (FWS).

Design/Methods

Prospective, multicenter study of infants considered at risk for SBI/IBI who ascertained the C-reactive protein (CRP), Procalcitonin (PCT), blood culture, urinary dipstick and culture. P-SEP was determined at the bedside in 150-mL whole blood samples from vein puncture.

Results

We enrolled 123 infants, 64 (52%) males and 59 (48%) females, aged 6–90 days. Among enrolled patients, 8 (6.5%) infants were diagnoses with IBI, 30 (24.4%) with SBI, 3 (2.4%) with probable bacterial infection/systemic inflammatory response syndrome (SIRS), 69 (56.1%) with probable viral infection and 13 (10.6%) with proven viral infection. In our sample P-SEP was positively correlated both with CRP (r2 0.26, p 0.005) and PCT (r2 0.44, p 0.000). In the SBI/IBI group of patients P-SEP had a positive correlation with PCT (r2 0.55, p 0.000) and CRP (r2 0.29, p 0.094) as well as in the subgroup of patients with positive urine dipstick for leukocytes and nitrite CRP (r2 0.48, p 0.162) and PCT (r2 0.61, p 0.037). The area under the ROC curve for P-SEP in the IBI group was 0.879 (95% confidence interval [CI] 0.75–1.00) while in the IBI/SBI group was 0.623 (95% [CI] 0.50–0.74) (figure 1). P-SEP had a greater accuracy than CRP and PCT in identifying IBI. P-SEP achieved the best accuracy for IBI at the cutoff of 449 pg/mL with 87.5% sensitivity (95% [CI] 47.3–99.7) and 84.3% specificity (95% [CI] 76.4–90.5). The positive and negative predictive values were 28% (95% [CI], 12.1–49.4) and 99% (95% [CI], 94.4–100). The logistic regression model that included all the possible explanatory variables (age, duration of fever and P-SEP) showed that only P-SEP value was significant (p 0.001).

Conclusion(s)

Our results indicate that P-SEP may be an accurate biomarker for IBI, because, at its best cutoff value of 449 pg/mL, it has 84.3% specificity and 87.5% sensitivity. These promising preliminary findings should be confirmed by the completion of the study.

VALUE OF TEMPERATURE FOR PREDICTING INVASIVE BACTERIAL INFECTION IN FEBRILE INFANTS. A SPANISH PEDIATRIC EMERGENCY RESEARCH GROUP (RISEUP-SPERG) STUDY

Importante estudio de nuestra red de investigación RISeuP, en el que se pone de manifiesto que la temperatura no es un factor suficientemente discriminativo para descartar infección bacteriana invasiva en el lactante febril < 3 meses de edad. Este estudio es muy oportuno, en el momento que algunos investigadores proponen que los lactantes febriles de esta edad con buen estado general y temperatura por debajo de 38,5ºC, podrían ser manejados sin la realización de pruebas analíticas en sangre, recomendando únicamente el estudio de la orina. Por el momento, parece que lo razonable es seguir manteniendo el

punto de corte de 38ºC para la realización del estudio completo de laboratorio.

Background

Infants <90 days old with fever without source (FWS) are in a higher risk of having an invasive bacterial infection (IBI) and a more aggressive management is usually recommended for this population. Few is known about the value of the fever degree for predicting the risk of IBI. Although most of the guidelines do not recommend modifying the management of these patients according to the fever degree, some authors recommend a different approach in well-appearing infant >28 days old depending on the maximum temperature detected.

Objective

Our objective was to analyze the value of temperature for predicting an IBI or and herpes infection in well-appearing infants 29-90 days old with FWS.

Design/Methods

Subanalysis of a prospective multicenter study including febrile infants ≤90 days old with FWS, carried out in 19 hospitals included in the Spanish Pediatric Emergency Research Group (RISeuP-SPERG) between October-2011 and September-2013. Axillary or rectal temperature ≤38°C at home or in the emergency department was considered fever. An IBI was diagnosed when a single pathogen was isolated in blood or cerebrospinal fluid (CSF).

Results

We recruited 3,401 infants. Of them, 2,253 were well-appearing infants >28 days old. In this subgroup, 43 (1.9%) were diagnosed with an IBI (39 positive blood culture, 3 positive CSF cultures and 1 patient with both positive cultures). One patient presented a positive CPR for herpes in CSF.

Area under the ROC curve for temperature for predicting an IBI was 0.623 (0.603-0.643) and for predicting specifically a bacterial positive culture or a herpes CRP in CSF was 0.651 (0.631-0671).

Sensitivity, specificity, and positive and negative likelihood ratios for specific cut-off points of temperature for predicting an IBI were as shown in Table 1.

There were 17 (1.35%) IBI among well-appearing patients with less than 38.6°C. There were no differences in rate of meningitis between patients with <38.6°C and ≤38.6°C (0.34% vs 0.31%, p=0.9).

Results were similar when analyzing specifically infants 29-60 days old and 61-90 days old.

Conclusion(s)

Temperature itself has a low accuracy for ruling out an IBI in well-appearing infants 29-90 days old with FWS. Temperature >39.5°C slightly increases the risk of having an IBI. Considering the prevalence in patients with lowest temperatures, we do not recommend modifying the management of these patients according to the maximum registered temperature.

COMPARISON OF THREE HAND SEALING TECHNIQUES FOR BAG-VALVE MASK VENTILATION IN AN INFANT SIMULATED MODEL

Este póster, defendido por Amanda Cruz-Deweese, del Nicklaus Children's (Florida), compara tres técnicas de sujeción de la mascarilla facial en la ventilación con bolsa, concluyendo que en los lactantes la técnica de sujeción con dos manos, o con dos manos modificada, es más eficaz que la sujeción con una sola mano. Os adjuntamos foto de las tres técnicas.

Background

For all patients, bag-valve ventilation is a critical skill all medical providers must be able to perform proficiently. The importance of obtaining a proper seal between a patient's face and the mask is essential for performing bag-valve ventilation, especially in the pediatric population.

Objective

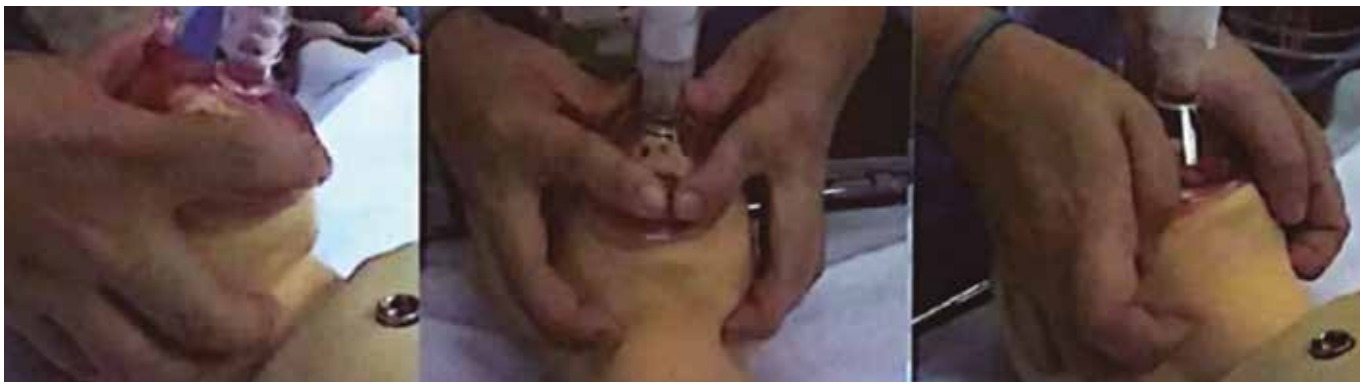
The primary aim of our study was to determine if there is a difference in measured tidal volume between one-handed, two-handed, and modified two-handed mask sealing techniques for bag-valve ventilation in a pediatric infant simulation model.

Design/Methods

The study design is a cross over prospective study. All study participants performed one-handed, two-handed, and modified two-handed techniques, each for 3 minutes. The breaths were delivered by a LTV 1200 Ventilator with preset respiratory rate and tidal volumes. The manikin head used was the infant respitrainer from Ingmar Medical. The respitrainer was capable of recording tidal volume, respiratory rate, and peak pressure. Exhaled tidal volume in mL and proximal peak flow pressure in cm H2O was measured and recorded with each breath.

Results

140 participants were enrolled. Of the 140, 138 had all three hand sealing techniques recorded. The



majority of participants were between the ages of 26-30 years and 31-35 years. Of those enrolled, 64.3% were female. The majority of participants were right handed, 85.7% and only a small fraction were left handed, 11.4%. The largest grouping of participants, 47.9% were MD/DOs. The one-handed sealing technique had a lower median tidal volume 101 than both the two-handed approach and modified two-handed sealing technique, median tidal volume of 117 and median tidal volume 119 respectively. The one-handed mask sealing technique also had lower median minute ventilation 2.2 when compared to the two-handed and the modified two-handed sealing technique with median minute ventilation of 2.6 and 2.6 respectively. The one-handed sealing technique also had a lower performance for peak pressure, median of 30.3 when compared to the median peak pressure for both the two-handed and the modified two-handed mask sealing technique, which had median peak pressures of 35.7 and 36.2 respectively.

Conclusion(s)

In this study, we found a statistically significant difference between the one-handed sealing technique, when compared to both the two-handed and the modified two-handed sealing technique in regards to tidal volume, but no statistically significant difference when comparing the two-handed and the modified two-handed techniques.

MARTES 8

SESIÓN POSTERS

DIPSTICK AND AUTOMATED MICROSCOPIC URINALYSIS TO DIFFERENTIATE KAWASAKI DISEASE (KD) FROM URINARY TRACT INFECTION (UTI) AND OTHER CAUSES OF FEVER

Un poster presentado por Vera Lyubasyuk, del Hospital de San Diego, que muestra como unos niveles mayores de urobilinógeno y bilirrubina en la orina de los pacientes con Kawasaki y piuria estéril, lo que puede ayudar a diferenciarlos de la ITU en Urgencias.

Background

Sterile pyuria is a characteristic of KD. However, pyuria in early KD may be difficult to distinguish from the pyuria of UTI or other febrile illnesses before culture results are available. Automated urinalysis systems provide rapid and precise cell and bacterial counts, but the ranges of pyuria and other abnormalities that distinguish KD from other illnesses are not known.

Objective

To describe differences in macroscopic (dipstick) and automated microscopic urinalyses that distinguish KD from UTI and other causes of fever.

Design/Methods

From subjects prospectively evaluated in a children's hospital emergency department for KD or for UTI, we collected the results of macroscopic (urobilinogen, bilirubin, nitrites, leukocyte esterase) and automated microscopic urinalyses (WBC and bacterial counts) and urine cultures. We defined: KD by American Heart Association criteria: febrile controls (FCs) by the presence of ≥3 days of fever, ≥1 KD clinical criteria and a non-KD final diagnosis; and UTI and non-UTI by presence or absence of ≥50,000 pathogens/mL on culture collected by catheter for fever without source. We compared proportions using chi-squared or Fisher's exact test and continuous variables using rank sum test to compare urinary abnormalities among KD, FC, and UTI-assessed patients.

Results

The 292 KD, 177 FC, 45 UTI, and 300 non-UTI patients had median ages of 33.1, 43.5, 6.8, and 8.2 months, respectively. WBC counts in KD overlapped those in UTI but were significantly lower ($p<.0001$, Table). Urinary WBC ≥50/μL and ≥100/μL were present in 38% and 25% of KD, 12% and 7% of FC, 86% and 84% of UTI, and 5% and 2% of non-UTI groups. Urobilinogen >0.2mg/dL and bilirubin ≥1+ were present in the urine of 38% and 14%, respectively, of patients with KD and in only 2% of patients with UTI. When WBC was ≥100 /μL, KD and UTI groups had significantly different proportions with bacterial counts ≥250/μL (9% vs. 97%, $p<.00001$), leukocyte esterase ≥1+ (54% vs. 92%, $p=.0001$), nitrites (1% vs. 44%), urobilinogen >0.2 mg/dL (50% vs. 3%, $p<0.0001$), and bilirubin ≥1+ (25% vs. 3%, $p= .003$).

Conclusion(s)

Automated urine WBC counts ≥50/μL and ≥100/μL occur in 38% and 25% of patients with KD. Pyuria accompanied by elevated urobilinogen or bilirubin or bacterial counts ≥250/μL should prompt consideration of early or incomplete KD, in order to prevent delayed diagnosis and unnecessary antibiotic treatment.

OUTPATIENT MANAGEMENT OF UTI IN YOUNG CHILDREN: DOES A DOSE OF PARENTERAL ANTIBIOTICS PREVENT ED REVISITS?

Este trabajo del Boston Children's, presentado por Pradip Chaudhari, muestra que la administración de una dosis de antibiótico parenteral previo al alta no redujo la frecuencia de reconsultas en los lactantes de entre 1-24 meses de edad diagnosticados de ITU respecto del tratamiento oral de inicio.

Background

Administration of parenteral antibiotics prior to emergency department (ED) discharge is common practice for young febrile children with urinary tract infection (UTI). The value of a single dose of parenteral antibiotic in addition to oral antibiotics is poorly studied.

Objective

We investigated the relationship between administration of a single dose of parenteral antibiotic prior to ED discharge and rates of ED revisits and revisits with

Table 1.

	Kawasaki disease n=292	Febrile control n=177	UTI n=45	Non-UTI n=300
Age, mo, median (IQR), range	33.1 (18.9, 67.2) 2.3 - 198	43.5 (21.5, 69.6) 1.7 – 186.3	6.8 (3.2, 12.5) 0.3 – 36.6	8.2 (3.6, 14.3) 0.3 – 38.7
Sex, male, n (%)	178 (61.0)	96 (54.2)	18 (40.0)	122 (40.7)
Urinary leukocytes, cell/μL, median (IQR), range	31.0 (8.7, 99.4) 0.5 – 2171.2	10.8 (4.3, 26.5) 0.2 – 934.9	1274.6 (226.3, 5533.9) 17.5 – 39373.6	11.7 (5.6, 19.7) 0.4 – 881.4
Bacteria, per μL,median (IQR), range	16.9 (6.6, 45.8) 0 - 30161.9	14.0 (5.5, 32.0) 0 – 536.1	6841.5 (1886.8, 13150.0) 140.1 – 54445.2	17.6 (10.5, 39.2) 0.8 – 1904.9
Bacterial count ≥250/μL	13 (4.5)	1 (0.6)	44 (97.8)	6 (2.0)
Urobilinogen >0.2 mg/dL, n (%)	112 (38.5)	39 (22.2)	1 (2.2)	--
Bilirubin ≥1+, n (%)	40 (13.8)	6 (3.4)	1 (2.2)	--
Nitrite positive, n (%)	2 (0.7)	1 (0.6)	20 (44.4)	1 (0.3)
Leukocyte esterase ≥1+, n (%)	57 (19.6)	22 (12.5)	38 (84.4)	3 (1.0)

subsequent admission among children with UTI initially managed outpatient with oral antibiotics. We hypothesized that severity-adjusted rates of 3-day ED revisits leading to admission would not be associated with parenteral antibiotic administration prior to discharge.

Design/Methods

Retrospective cohort study of 36 US pediatric hospitals from 2010-2016 utilizing administrative data obtained from the Pediatric Health Information System. Patients aged <2 years evaluated in the ED with the primary diagnosis of UTI were included. Patients with chronic co-morbidities were excluded. We estimated average treatment effects using inverse probability weighted (IPW) regression, with adjustment for demographic factors, diagnostic testing, ED medication, and with indicator variables for hospitals. Primary outcome was 3-day ED revisits resulting in admission and a secondary outcome was any ED revisit regardless of disposition.

Results

29,919 children with a median (IQR) age of 8.6 (5.1, 13.8) months were studied. 36.3% of children received parenteral antibiotics prior to ED discharge. Among those who received parenteral antibiotics, adjusted ED revisit rates with admission and overall revisits (95% CI)) were 1.3% (1.1, 1.5) and 4.8% (4.3, 5.3), respectively, whereas among patients who did not receive parenteral antibiotics, these rates were 1.0% (0.8, 1.3) and 3.3% (2.9, 3.6), respectively. No difference was found in revisit rates resulting in admission among patients who received parenteral antibiotics compared to those who did not [risk difference (CI): 0.3 (-0.01, 0.6)], although overall revisit rates were higher among patients who received parenteral antibiotics [risk difference 1.5 (0.9, 2.1)].

Conclusion(s)

A single dose of parenteral antibiotic was administered prior to ED discharge in over one-third of young children with UTI initially managed outpatient. However, among patients with UTI being discharged from the ED, a parenteral dose of antibiotics did not reduce revisits leading to admission, supporting the goal of discharging patients with oral antibiotics alone.

SESIÓN COMUNICACIONES ORALES 4

TRUST IN PEDIATRIC EMERGENCY DEPARTMENT PHYSICIANS: CAN IT BE MEASURED?

Destaco este trabajo de Terri Byczkowski, del Cincinnati Children's, por su originalidad, al intentar medir la confianza que las familias tienen en los médicos que atienden a sus hijos en un servicio de urgencias pediátrico. Para ello utilizan una escala ya validada (Wake Forest measure of trust) en el entorno de atención primaria de adultos y la adaptan al entorno de urgencia pediátrica. Encuentran que la escala muestra gran fiabilidad (Cronbach's Alpha = 0.88) y un moderado-alto grado de confianza entre los usuarios de su hospital. Puedes ser una herramienta válida y fiable para ser utilizada en nuestros servicios de urgencias.

Background

Patient trust in physicians is vital to the diagnostic and therapeutic processes that occur in productive healthcare encounters. In adult primary care it has been shown to be positively associated with adherence; use of preventative services; satisfaction; and increased patient information disclosure. A validated measure and studies of trust in pediatric emergency department physicians are lacking.

Objective

To modify and test the usefulness, reliability, and validity of an existing scale validated in the adult primary care setting for use in a pediatric emergency department (PED).

Design/Methods

A 2-phase design with a study population of parents who brought their child to an urban PED with a chief complaint of abdominal pain or head injury. These diagnoses can be undifferentiated resulting in trust being an important component of the physician/parent interaction. The10-item Wake Forest trust scale, which uses a 5-point Likert scale, was modified by rewriting the items in the past tense, referencing the child, and making "doctor" plural to account for teams. Further modifications were made based on cognitive interviews conducted by telephone with 15 parents (6/2016 - 8/2016) to uncover issues with comprehension, recall, ambiguity, and applicability. The scale was field tested (2/2017 - 9/2017) using an IPad based survey administered to a sample of 150 parents at the end of their visit. Usefulness was measured by % missing responses and ceiling effects (% best response category). Cronbach's Alpha measured reliability. A total trust score was calculated by summing the item scale values accounting for negatively worded items. Scores could range from 5 to 50. As evidence of validlity, correlations were calculated between the trust score and validated measures of constructs shown to be positively associated with trust.

Results

Four items were modified prior to field testing (Figure). Ceiling effects for scale items ranged from 53 to 67%. Missing data was minimal (< 3%) affecting 2 items. The modified scale exhibited high reliability (Cronbach's Alpha = 0.88). Total trust scores ranged from 27 to 50 with mean (SD) = 45.1 (4.9) and median (IQR) = 46 (9). The trust score was moderately to highly positively correlated with communication, intent to adhere to physician recommendations and overall satisfaction.

Conclusion(s)

This study provides evidence that a modified Wake Forest measure of trust is applicable, reliable and valid in the PED setting for this population.

ERRORS OF OMISSION: AN EVALUATION OF EMERGENCY DEPARTMENT DISCHARGE EDUCATION

En este interesante estudio de Drew Louden, del Seattle Children's, los investigadores intentan comprobar si los 12 componentes claves de las instrucciones al alta de los pacientes de urgencias, establecidos en su hospital, se cumplen. Para ello realizan una encuesta a los padres y encuentran que, en un alto porcentaje, más de un 90% falta alguno de los criterios de calidad de la información al alta establecidos. Proponen que un "check list" al alta incluyendo los componentes claves podría mejorar este aspecto. Creo que tanto disponer de unos criterios de calidad de información al alta y facilitar su cumplimiento son dos buenas iniciativas a llevar a cabo en nuestros servicios de urgencias.

Background

The Emergency Department (ED) discharge process is a complex procedure with multiple components and parties involved that can lead to incomplete information, poor comprehension, and variability of instructions for similar diagnoses. The Agency for Healthcare Research and Quality in partnership with Boston University created project RED or "Re Engineering Discharge" to aid in the discharge process. In the toolkit they recommend twelve key components to a complete discharge process. This study aims to assess, through caregiver interview, whether the key components of discharge are used in a freestanding academic pediatric emergency department.

Objective

Objectives for this study were to 1) assess whether caregivers report provider discussion of recommended components of discharge education during the discharge process 2) assess caregivers' satisfaction with discharge instructions, and 3) assess caregiver self-reported understanding of different components of discharge process.

Design/Methods

A 21 question verbal survey was given to caregivers immediately after ED discharge. Data was collected over two months/two resident blocks (Nov./Dec. 2017), on all days of week, and all times of day at Seattle Children's ED. Seven components of the original twelve that focused on provider communication were chosen for assessment. Components of discharge process assessed by survey-included use of interpreter, "teach back", follow up instructions, medication instructions, illness explanation, natural course, and return precautions. Satisfaction and understanding scores were obtained using a 5-point Likert scale.

Results

52 patients' caregivers were approached with 50 participants enrolled. Only eight percent (4/50) of caregivers reported all components of discharge instructions were discussed (Table 1 and Figure 1). Despite missing several components of discharge instructions, caregivers reported high satisfaction scores with a mean score of 4.5/5. Caregivers also reported high levels of understanding for each of the components.

Conclusion(s)

Ninety two percent of caregivers reported receiving incomplete discharge instructions with sixty eight percent of them stating two or more missing components. Without a standardized educational discharge process, many families are receiving incomplete discharge instructions. A standardized checklist for the ED discharge process may increase the proportion of families receiving complete discharge instructions, which may lead to decreased return rates and improved patient outcomes.