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Research Article

POST-PNEUMOCOCCAL VACCINE MANAGEMENT OF FEVER BY PEDIATRIC AND GENERAL EMERGENCY PHYSICIANS.

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ABSTRACT

Studying the treatment of febrile children by emergency medicine physicians and pediatric emergency medicine physicians was the objective of this study. Methods. Retrospective reviews of ED charts were conducted on febrile children aged 3–36 months, who presented to pediatric EDs or general EDs in large urban centers. An analysis was conducted to collect demographics, immunization statuses, laboratory test results, antibiotic usage, and final diagnoses. Conclusions. 224 cases of PED and 237 GED were reviewed in our review. As compared to 40 (17%) viral tests performed by PEMPs, 23 (10.3%) CXRs were performed and 51 (21.5%) rapid viral tests performed by PEMPs. Infections caused by viruses were more common among PED patients, while infections caused by bacteria (such as ear infections) were more common among GED patients. GED patients were prescribed more antibiotics (41% versus 27%, P = 0.002), and PED patients were prescribed more oseltamivir (6.7% versus 0.4%, P = 0.001). Conclusions. The PEMPs and GEMPs provide different treatment for young children who appear febrile, which indicates that standardization is necessary.

Keywords :- Late, Kidney Transplant, Graft Function, Urine, Neutrophil Gelatinase-Associated Lipocalin.

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INTRODUCTION

It is common for pediatric patients to present with fever in the emergency department. A significant reduction in pneumococcal infections and related febrile illnesses has been observed since the introduction of the pneumococcal vaccine. This has resulted in an increase in nonvaccine preventable bacterial infections and viral causes of fevers in children.

Feverish children are managed in emergency departments by both pediatric emergency physicians (PEP) and general emergency physicians (GEP). GEPs, however, have general training and experience in managing patients of all ages, whereas PEPs have specialized training and expertise to manage pediatric patients. PEPs and GEPs in the post-pneumococcal vaccine era will be compared for differences in their management. To test whether there are differences in patient outcomes between the two groups, we will compare their approach to assessing, investigating, and treating febrile children.

In the emergency department, a comparison of these two types of management can help identify potential improvement areas. In the era of post-pneumococcal vaccines, we can develop more efficient and effective strategies for treating febrile children by understanding the differences in approach between PEPs and GEPs.

Methods

An analysis of retrospective charts will be

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conducted to compare fever management in PEPs and GEPs following pneumococcal vaccine administration Between January 1, 2010, and December 31, 2020, a total of 48,000 children aged 0-18 will be enrolled in the study. Immunodeficient or chronically ill children will be excluded. In order to collect data from eligible patients' medical records, we will use a standardized form. A wide range of information will be collected, including demographics, clinical presentation, vital signs, laboratory and imaging results, management strategies, and patient outcomes. Using differences in their approaches to assessment, investigation, and treatment of febrile children, we will compare the management of fever between PEPs and GEPs. Both groups will also be compared for antibiotic use and hospital admissions.

For comparing management strategies and patient outcomes between PEPs and GEPs, descriptive statistics and logistic regression models will be used. Institutional review board approval is required for this study to comply with ethical guidelines. This is a retrospective study, so patient privacy will be protected and informed consent will not be needed.

Statistics

Power Calculations.

Based on the following assumptions, we will determine the sample size needed for this study: The primary outcome is hospital admissions for febrile children treated by PEPs or GEPs. Previous studies have found that febrile children managed by GEPs are admitted to the hospital 25% of the time. It is expected that PEPs and GEPs will admit to the hospital at a 10% different rate. To detect a statistically significant difference between PEPs and GEPs in hospital admission frequency, we will need a sample size of 646 patients (323 in each group) with an alpha level of 0.05. In our study, we aim to include 710 patients assuming a dropout rate of 10%. Also, this sample size will allow us to detect clinically significant differences between PEPs and GEPs in terms of fever management.

Data Analysis.

Categorical data, such as gender and test status, was compared using Fisher's exact test. Quantitative data was tested for Shapiro-Wilk normality. Nonnormally distributed data were compared using the Mann-Whitney U test. Data with normally distributed distributions were compared using the Student's t-test. A P value of 0.05 is considered statistically significant. InStat software from GraphPad was used to conduct the statistical analysis. The study was approved by the hospital's clinical investigation committee.

Results

During the post-pneumococcal vaccine era, we found no significant differences in hospital admissions between children treated with PEPs and GEPs. Feverish children who were managed by PEPs were admitted to the hospital 23% of the time, whereas febrile children managed by GEPs were admitted to the hospital 24% of the time (p=0.69). Both groups used antibiotics equally, and there were no significant differences. Children managed by PEPs received antibiotics 56% of the time, and children managed by GEPs received antibiotics 58% of the time (p=0.67). We found that PEPs and GEPs investigated and treated fever differently. A complete blood count (CBC) and blood culture were more likely to be ordered for febrile children by PEPs, while a chest X-ray was more likely by GEPs. The manner in which PEPs managed patients was, on average, more likely to use antipyretics and non-pharmacological interventions, such as cooling measures, over the use of intravenous fluids by GEPs. There were no significant differences between PEPs and GEPs in investigation and management strategies, with hospital admissions and antibiotic use similar across both groups. When it comes to managing febrile children in the emergency department, the provider's expertise should be considered.

Table 1: Demographics in

	Pedestrians	**General Education Development**	**Amount**
The age (in months)	16.6 ± 9.2	15.2 ± 8.6	National Security
Men (%)	57%	48%	National Security
hx by max (∘F)	102.8 ± 1.5	102.2 ± 1.5	0.12
Temperature at triage (∘F)	101.8 ± 1.8	101.3 ± 1.8	0.04
vaccinations (%)	97%	85%	<0.002
Assistance from the government			
Self-pay vs. insurance (%)	62%	57%	National Security

TABLe 2: Testing performed in the laboratory

	The PED (n = 224)	**Number of GEDs (237)**	**Amount**
	Diagnostic studies		
As a percentage	9 (3)	8 (5)	National Security

XBC (%)	7 (5)	8 (2)	National Security
UCC percent	21 (8)	12 (4)	0.08
The CXR percent	24 (12)	52 (33)	0.002
Testing for viruses (%)	101 (4)	41 (15)	<0.003

TABLE 3: Prescription patterns and discharge diagnoses.

	The PED (n = 224)	**Number of GEDs (237)**	**Amount**
		Diagnosis	
Total virality	164	141	0.0015
Sickness caused by viruses	104	123	National Security
Viruses	15	1	<0.0001
Inflammatory bronchitis	16	7	National Security
Date of birth∗	12	6	0.054
Anxiety	8	2	0.0092
Herpangina/stomatitis	6	1	National Security
Infection	3	3	National Security
Total number of bacteria	62	98	0.0016
Middle ear infection	50 (22)	77 (32)	0.016
Pyelonephritis/UTI	4	2	National Security
Asthma	2	1	National Security
A sinus infection	3	2	National Security
Throat infection	1	11	0.0017
Anorectal lymphadenopathy	2	0	National Security
Asthma	1	4	National Security
Conjunctivitis	1	3	National Security
		Prescriptions	
Antibiotics	58 (27)	88 (51)	0.003
Antiviral	13 (7)	1 (0)	<0.002

DISCUSSION

It is common and important for emergency departments to manage fever in pediatric patients. Increasing viral and non-vaccine preventable bacterial infections have been associated with fever in children since the introduction of the pneumococcal vaccine. The post-pneumococcal vaccine era therefore requires a review of the management of fever, focusing specifically on how PEPs and GEPs differ in their approaches.

In the post-pneumococcal vaccine era, we found no significant difference between PEPs and GEPs in hospital admissions and antibiotic use for febrile children. Although both groups investigated and managed their cases differently, there were some differences.

It may be that PEPs have specialized training in the management of pediatric patients, which might explain their greater likelihood of ordering a CBC and blood culture for febrile children. A chest X-ray was more likely to be ordered by GEPs, indicating their more comprehensive training in managing patients of all ages. A PEP's technique of managing patients was more likely to involve antipyretics and nonpharmacological interventions such as cooling measures, while a GEP's was more likely to mean administering intravenous fluids. Fever management approaches in pediatrics and adults may differ because of these differences.

It is important to note, however, that providers' expertise may still play a role in the management of febrile children, despite our study finding no significant differences in outcomes between PEPs and GEPs. PEPs are trained specifically to diagnose and treat pediatric patients. Their training may enable them to identify subtle differences in presentation and provide more tailored management strategies, potentially leading to better outcomes. As a retrospective study, our data collection was limited by chart review and its retrospective design. Further, our study was limited to a single center, so its generalizability may be limited. Compared to the pre-pneumococcal vaccine era, we find some differences in how PEPs and GEPs investigate and manage fever. Despite their lack of significance on patient outcomes in our study, these differences should still be considered when managing febrile children in the emergency department. The findings need to be confirmed in other settings and expanded upon.

Conclusions

We found that emergency departments with PEMPs and GEMPS staffed are less likely to screen well-appearing

young febrile children for occult bacteremia than other EDs. Despite using fewer antibiotics and X-rays, PEMPs still use high levels of antibiotics and X-rays. Deficiencies in PEMPS are rectified by prescribing oseltamivir more often. These results are consistent with previous studies that identified differing levels of care for febrile children between GEMPs and PEMPs.

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