

Knowledge and Practices of Physicians in Managing Pediatric Community Acquired Pneumonia (CAP) in a Major city in United Arab Emirates (UAE)

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ABSTRACT

Objectives: The study aims to assess the knowledge, attitude and practices of physicians who deal with pediatric CAP in reference to the Infectious Diseases Society of America (IDSA) guidelines on this regard that was published in 2011.

Background: Community acquired pneumonia (CAP) is a common disease and the leading cause of death among children worldwide. However, there seems to be large diversity among physicians when it comes to diagnosis, investigation and treatment of the condition, despite a recent clinical practice guideline that was released in August 2011 by the Pediatric Infectious Diseases Society of America (IDSA guideline).

Method: An anonymous 15-item survey exploring knowledge, attitude and practices related to diagnosis and management of Pediatric CAP was distributed to physicians of different levels of experience (from residents to consultants) in the departments of Pediatrics, Emergency Medicine and Family Medicine in different governmental and private facilities in Al-Ain city.

Keywords

Community acquired pneumonia, Children, Knowledge, Clinical practice, Al-Ain-UAE.

Introduction

Pneumonia is the most common infectious disease seen in pediatric age group with high rate of morbidity and mortality worldwide. Despite the availability of several international clinical practice guidelines for the management of this common condition, there seems to be major discrepancies in the way it's being managed by different physicians. This may have a negative effect on the overall clinical outcome and the cost of caring for those children.

Therefore, the purpose of this study was to assess the knowledge, attitudes, and practices on the diagnosis and management of Pediatric CAP among health care practitioners across various specialties in Al Ain city. This was accomplished through a 15-item survey, in which questions were based on the recently revised 2011 Infectious Disease Society of America (IDSA) guidelines on the diagnosis and management of CAP [1].

Method

Study Design and Setting

The study has been approved from Health Research, Ethics and Innovation Program in Tawam Hospital, Al-Ain, United Arab of Emirates. A cross-sectional survey was conducted during the period of 6 months from October 2017 to march 2018 among randomly selected physicians of different levels of experience (from residents to consultants) in governmental and private facilities in Al-Ain city. Al-Ain city is one of the major cities in United Arab Emirates with an estimated population of one million people of diverse ethnic and social backgrounds.

The Questionnaire and Data Collection

A pre-tested 15-item questionnaire was used to collect data from participants and composed of two sections. The first section focused on demographic data while the second one consisted of questions and cases scenarios targeting the participant's knowledge, attitudes and practices in managing CAP. The questions were formulated by the authors themselves and were developed after an extensive review of relevant literature and relevant previous large studies.

The questionnaire was thoroughly revised by the research team and a senior faculty member with extensive experience in survey research for validity, comprehensiveness, and appropriateness to collect the required information from the targeted population. A five point-Likert scale (“Strongly agree”, “Agree”, “Not sure”, “Disagree”, and “Strongly disagree”) was used in all the questions of the second section.

The questionnaire was tested with a group of 20 physicians before being finalized. Minor modifications were suggested and then adopted in the final questionnaire.

Convenient method of sampling was adopted. Physicians who were willing to dedicate 10-15 minutes of their time to complete the survey were selected. Data was collected by the authors of the research themselves and surveys were completed by face-to-face interview. All responses were recorded and saved in protected places to maintain confidentiality and anonymity. About 110 surveys were completed, however 10 surveys were excluded as one or more questions were not answered by the participants.

Statistical Analysis

Data was processed using Microsoft Excel Sheet. The descriptive analysis was shown as percentages. Questions with less than 90% correct answers were identified as “Gaps”.

Results

120 surveys were distributed. 104 were returned. However, four surveys were excluded because they were incomplete. Therefore, one hundred surveys were included in our final analysis. The included surveys were completed by 55 residents, 15 general practitioners, 15 specialists and 15 consultants. 73% were from governmental hospital, 12% from Primary Health Care (PHC) and 15% only from private sector. 63% of the respondents were females and 37% were males. The participants came from three different departments: 68% from general pediatric departments, while only 13% were from Emergency Departments (ED), and 19% were from Primary Health Care Centers. Among the study group, 59% of physicians were having less than 5 years of experience, while 15% had experience of 5-10 years, 9% of 11-15 years and 17% more than 15 years (Table 1).

Demographics	Percentage
Gender	
Male	37%
Female	63%
Department	
Family medicine	19%
Pediatric	68%
Emergency	13%
Level of training	
General practitioner (GP)	15%
Resident	55%
Specialist	15%
Consultant	14%
Place of work	
Private	15%
Primary Health Care (PHC)	12%
Government	73%
Years of experience:	
<5 years	59%
5-10	15%
11-15	9%
>15	17%

Table 1: Demographic characteristics of the study population.

The questions were divided into four main groups: displayed in Table 2.

- Questions related to admission criteria
- Questions related to utilization of lab tests
- Questions related to utilization of imaging studies
- Questions regarding indications of anti-infective treatment
- Questions related to prevention

Q1. 4 months old baby boy presented with suspected bacterial CAP in respiratory distress requiring 0.5L of oxygen via nasal cannula. Does he require hospitalization?
Q2. Do you think infants or children with suspected or documented CAP caused by community acquired methicillin resistant staphylococcus aureus should be hospitalized?
Q3. 1 year old boy, diagnosed as CAP that needed oral antibiotic but the family were not sure if they could observe the child at home. Do you agree with discharging this patient home?
Q4. 2 years old boy previously healthy and fully immunized was diagnosed with CAP. A blood culture must be part of the work up.
Q5. 2 years old boy previously healthy and fully immunized was diagnosed and treated as CAP, but after 3 days of antibiotic therapy he is still febrile and tachypnic. A blood culture must be part of the work up.
Q6. 2 years old boy previously healthy and fully immunized was diagnosed and treated as CAP. The patient was doing well on follow up but his initial blood culture from ER grew staphelococcus aureus. A repeat blood culture must be part of the work up despite his favourable response to treatment.
Q7. Acute-phase reactants (ESR, CRP) can be used as the sole determinant to distinguish between viral and bacterial causes of CAP.
Q8. 18 months old baby girl presented with fever, runny nose and cold for 3 days, on mild respiratory distress, you suspect CAP. A viral panel must be tested as part of the work up including influenza and parainfluenza.
Q9. 6 year's old boy presented with fever, cough and myalgia and respiratory distress. This is most probably a case of atypical mycoplasma pneumonia.
Q10. When Chlamydia pneumonia is suspected, confirmation with diagnostic testing is strongly recommended.
Q11. Routine chest radiographs are necessary for the confirmation of suspected CAP in patients well enough to be treated in the outpatient setting.
Q12. Antimicrobial therapy is not routinely required for preschool-aged children with CAP.
Q13. All patients with suspected bacterial CAP should be started on broad spectrum antimicrobial therapy such as second generation cephalosporin.
Q14. When initiating antimicrobial therapy, 7 days of therapy could be sufficient.
Q15. Annual Influenza vaccine for children 6 months of age and older is known to decrease the risk of not only severe influenza but also bacterial CAP.

Table 2: Surveyed Questions.

Number of the Question	Percentage of correct answers
1	91%
2	82%
3	86%
4	72%
5	90%
6	63%
7	84%
8	63%
9	42%
10	94%
11	86%
12	29%
13	64%
14	79%
15	59%

Table 3: Summarize the percentage of correct answers provided by the participants for each question.

Discussion

The purpose of this study is to assess the knowledge, attitudes, and practices on the diagnosis and management of CAP amongst health care practitioners across various specialties in Al Ain city.

We included physicians who encounter CAP infections in pediatric population on their daily practice including physicians from general pediatrics department, emergency department and family

medicine. The participants had different levels of experience. Most of them had less than five years of experience, which is expected since most of the participants were residents in training. Despite the fact that we were unable to have a meaningful subgroup analysis – based on specialty or level of experience- due to the small number, the survey did identify several gaps in the knowledge and practices of the participants. Due to the fact that CAP is a very common pediatric diagnosis with a relatively high morbidity and mortality; and the fact that there are well established management guidelines, we considered any question with returned correct answers of less than 90% as a “Gap”.

Regarding the participants knowledge of admission criteria of CAP, the participants seemed to recognize several indications for admission since more 91% of the surveyed physicians agreed on admission for patients with respiratory distress, suspected bacterial infection and hypoxemia. However, only 82% believed that admission is indicated when MRSA is a suspected or confirmed cause of CAP; and only 86% believed that admission is indicated if compliance with oral home therapy is not guaranteed.

Regarding laboratory and radiology investigations of CAP, several gaps were identified since only 72% of the respondents disagreed that blood culture is a must in patients with CAP who are previously healthy and fully immunized. And 63% of the respondents only agreed to repeat blood culture if grew *staphylococcus aureus*. On the other hand, 90% correctly believed that a blood culture is indicated in patients who continue to be febrile after three days of therapy.

When it came to utilization of other diagnostic investigations, the results were variable: >94% knew that acute phase reactant should not be the sole determinant in distinguishing between viral versus bacterial pneumonia. Only 84% believed that viral studies could be helpful and only 63% believed that mycoplasma needs to be

considered as a causative pathogen among school aged children. Furthermore, only 42% knew that testing is not indicated when chlamydia infection is suspected.

In regards to imaging, only 86% of the participants believed that a chest x-ray is not needed in a child who is well-enough to be treated in outpatient basis.

Finally, regarding the treatment and prevention of CAP, again, several gaps were identified as follows: Only 29% of the participants were aware that antibiotics is not indicated in most cases of CAP in preschool children since the cause is usually viral. Also, only 64% knew that when treatment is indicated, broad spectrum antibiotics should be avoided and only 79% knew that seven days of therapy is sufficient in most cases. Finally only 59% of the participants knew that the annual influenza vaccine plays a major role in decreasing the risk of CAP.

Conclusion

Although this study was limited by the relatively small sample size and the fact that most of the participants were residents in training, we still believe that the study did identify several gaps in knowledge and practices among the participating physicians in the management of Pediatric CAP. Those gaps were brought to the attention of the health authorities and the administration of the participating facilities hoping that they would be targeted by future CMEs and quality improvement projects.

References

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