

Original Article

SURVEY BASE STUDY ON CURRENT TREND OF TREATMENT OF COMMUNITY-ACQUIRED PNEUMONIA IN KARACHI

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ABSTRACT

Objective: Community-acquired pneumonia (CAP) is a potentially serious infection that results in various general physicians (GP) visits and hospital admission every year. The prime objective of this research was to find the current trend of treatment of community-acquired pneumonia in Karachi.

Methods: It was a prospective survey conducted in all districts of Karachi. A Questionnaire was filled by distinctive specialities of doctors in an outpatient setting in Karachi. A preliminary test questionnaire was used to collect the data directly from distinctive specialities of doctors in outpatient setting in Karachi. Total 500 doctors were selected from distinct districts of Karachi with convenient random sampling.

Results: Majority (33.8%) of the respondents recommended complete blood count and chest x-ray for diagnosis of community-acquired pneumonia in an outpatient setting. Most (76%) of the respondents recommended nebulization for the management of community-acquired pneumonia in an outpatient setting. 31% and 25.4% of the physicians recommended clarithromycin as 1st line antibiotic therapy in adults and children for the management of a community-acquired pneumonia patients in outpatient setting. 55.6% of the physicians recommended two-week duration of antibiotic therapy for the management of CAP in outpatient setting.

Conclusion: This is clearly indicated by this study that deviation from the standard guideline is observed in the management of community-acquired pneumonia in Karachi. These deviations from the highly recommended guideline can result in excess cost and inappropriateness of the management of the disease of community-acquired pneumonia. There is a need that the physician should take a decision of therapy according to the standard guidelines for the treatment of CAP in an outpatient setting.

Keywords: Community-acquired pneumonia (CAP) and Antibiotics.

INTRODUCTION

Community-acquired pneumonia (CAP) is a potentially dangerous infection that results in various general physicians (GP) visits and hospital admission every year, and records for a considerable measure of anti-infection recommending [1, 2]. Community-acquired pneumonia (CAP), an entity associated with a high level of morbidity and mortality and significant utilization of health care resources, continues to be an important problem [3, 4]. The decision of beginning treatment is typically experimental as a result of the genuine nature of the ailment, which makes it important to begin treatment before a complete etiologic conclusion. In this way, so as to enhance the fittingness of the administration of CAP, various authority proposals have been distributed in the United States and in Europe in regard to the requirement for hospitalization, demonstrative methods, and decision of introductory experimental antimicrobial treatment, as per nearby the study of disease transmission [5]. Furthermore, abundant evidence has been found demonstrating the existence of variations in clinical practice that cannot be explained by variations in epidemiology or in the characteristics of the patients being treated [6-8].

The implementation of a practice guideline implies the timely and appropriate application of available scientific evidence, the use of quality control indicators to closely monitor adherence to key recommendations, and systematic ongoing monitoring of these indicators to identify possible areas of improvement and determine to what degree target objectives are being met. The fact that a clear link has been demonstrated in patients with CAP between certain aspects to the process of care, and the outcomes obtained has made it potential to define reliable quality indicators that have been accepted internationally [9, 10]. Amid the expanding expense of medicinal consideration and the late cuts on the monetary backing of the bureau of health. It is important to guarantee that restorative monetary aspect is adjusted by great therapeutic mind, then again,

absence of institutionalized proof based strategy for administration of any clinical condition may prompt substandard consideration of a patient because of lacking data and poor preparing [11].

Assessment of the nature of consideration rendered to be patient with diverse illness condition, and in distinct setting is imperative to evaluate the execution of the social insurance supplier and focus the viability of administration and organization measures to enhance the foundation administration to a patient. To address these issues a few rules for basic maladies were produced throughout the last few years. The reason for these rule is to furnish doctor with a balanced methodology to the administration of distinct clinical condition development of a guideline for group obtained pneumonia was, in view of the distinguished that in spite of presentation of fresher antimicrobials change in demonstrative innovation and remedial modality and mortality from this condition [12].

The objectives of the current study were to identify evolving trends in the outpatient treatment of CAP. The aim of the present study was to evaluate the management of CAP by doctors in Karachi in terms of treatment decisions and clinical outcomes through a survey base study from different specialties of doctors and to analyze its efficiency according to its consistency with a recommended guideline.

MATERIALS AND METHODS

The present study was a survey base study conducted in unlike outpatient clinic and hospital setting at five distinctive districts of Karachi Pakistan. Karachi consists of more than 15 million residents and regards a superior and economical zone of Pakistan. At the foundation, the economic burden of the disease shows specific economical procedure [13]. The participants were selected from the list of doctors obtained from medical representative of pharmaceutical companies. Who generally possessed the addresses and mobile number of doctors. We took a random sample by a Random Number Generator. Doctors of

distinct specialties (General practitioner, general physicians, pediatricians, RMO and chest specialist) were included from all distinct districts of Karachi. [14]. The participants were practicing at particular and public sectors hospitals and personal clinics. An appropriate time to the filing of pro forma was given to the participants.

The questionnaire was piloted on 20 doctors. Based on responses obtained from the pilot tests, minor changes were made. Items which lacked clarity, and comprehensiveness were deleted.

The pro forma consisted of initial demographic information about the participants and questions covering the following areas, laboratory test and radiology preferred for diagnosis of community-acquired pneumonia, nebulization, monotherapy of antibiotic in adult and children and duration of therapy of antibiotic for the management of CAP in outpatient setting in Karachi. About 500 participants completely filled the questionnaire from August 2011 to October 2012.

Ethical approval

Ethical approval permission was ensured from the Board of Advance Study and Research (BASR) of the University of Karachi. The purpose to the study was explained in details to the participants, and confidentiality was ensured. Written informed consent was obtained from every participant before filling the questionnaire.

Data analysis

Data were authorized following double entry as given the code number of all filled questionnaire and afterwards data was first input in the excel sheet and after that analyzed further on SPSS,

mean, variance, valid frequency of answer, percentage and cumulative percentage was taken. Chi Square was used for comparison among distinct specialties of physicians regarding management of CAP. The histogram of data was taken for additional understanding.

RESULTS

Totally 500 questionnaires were included in the study. Out of 500 respondents in which 300 were General Practitioner. 99 were General Physicians. 27 were Pediatricians. 24 were chest specialist and 50 was (Resident medical officers (RMO) in which 100 respondents were female and 400 respondents were male. Majority of the respondents were in the age limit of 31-40 years.

Preferences for recommendation of diagnostic tests for identification of cap

Whenever the respondents were asked about their preference of laboratory test for diagnosis of community-acquired pneumonia patients. We find that the tabulated $\chi^2=68.354$, $df=32$ and $p<0.05$. So it is concluded that there is a significance trend of opinion among different specialties of doctors for the diagnosis of community-acquired pneumonia on first visit of a patient to their clinic.

Majority (33.8%) of the respondent recommend complete blood count and chest x-ray and 23.4% of the respondent recommend complete blood count, chest x-ray and sputum culture for the laboratory test for diagnosis of community-acquired pneumonia in an outpatient setting.

Table 1: Demographic characteristics of the participants

Demographic characteristics		Frequency
General practitioner		300
General Physicians		99
Pediatricians		27
Chest specialist		24
Resident Medical Officer (RMO)		50
Gender		
Male		400
Female		100
AGE range		
	25-30year	108
	31-40year	187
	41-50year	154
	Above 55year	51
Average number of CAP patient per week		
	1	29
	2	46
	3	271
	4	49
	5	5

Table 2: Diagnostic Tests

Specialty	Diagnostic tests that doctors recommend at first visit to cap patient in their outpatient setting									
	CB C + CX R	CX R	CBC + CXR + sputum culture	CBC + CXR + sputum culture + gram staining	CBC + CXR + Sputum culture + S/U/C/E	CXR + sputum gram staining	CXR + sputum culture + S/U/C/E	CBC+CXR+S/ U/C/E	CXR+S/ U/C/E	Total
G. Physician	30	7	37	1	10	4	3	7	0	99
Pediatrician	12	4	3	0	0	4	1	3	0	27
G. Practitioner	98	25	61	14	32	45	15	10	0	300
RMO	21	6	9	0	8	5	0	1	0	50
Chest Specialist	8	4	7	0	1	2	0	1	1	24
total	169	46	117	15	51	60	19	22	1	500
Percentage %	33.8	9.2	23.4	3	10.2	12	3.8	4.4	0.2	100%

CBC=complete blood count, CXR=Chest x-rays, S/U/C/E=Serum urea, creatinine and electrolyte

Preference of nebulization

Whenever the respondents were asked about their preference of nebulization for the management of community-acquired pneumonia χ^2 we find that the tabulated $\chi^2 = 47.533$, $df=16$ and $p<0.05$ there was a significance trend of opinion among different specialties of doctors for the treatment of CAP in outpatient setting. Majority (76%) of the respondent recommend nebulization for the management of community-acquired pneumonia in outpatient setting.

Monotherapy treatment preferences among doctors for management of cap in adults

When the respondents were asked about their preference prescribing antibiotic for the treatment of CAP in adults. We find that the tabulated $\chi^2 = 89.286$, $df=60$ and $p<0.05$ means there was a significance trend of opinion among different specialties of doctors for the management of CAP in an outpatient setting. Majority (31%) of the respondent recommended clarithromycin as 1st choice of prescribing antibiotic and 21% of the respondent to recommend levofloxacin as 1st choice of prescribing antibiotic for management of CAP in outpatient setting in Karachi.

Treatment preferences of prescribing antibiotics for treatment of cap in children

Whenever the respondents were asked about their preference of prescribing antibiotic for the treatment of CAP in children, we found that the tabulated $\chi^2 = 169.477$, $df=56$ and $p<0.05$ mean that there is a significance trend of opinion found among different specialties of doctors found for the management of CAP in children in outpatient setting. Majority(25.4%) of the respondent recommended clarithromycin as 1st choice of prescribing antibiotic and 17.8% of the respondent to recommend levofloxacin as 1st choice of prescribing antibiotic and 17.6% of the respondent to recommend co amoxiclave for management of CAP in outpatient setting in Karachi.

Preferences of duration of antibiotics for the management of cap patients

Whenever the respondents were asked about their preferences for duration of treatment of CAP by antibiotic. Majority (55.6%) of the respondent recommends two weeks of duration of therapy of antibiotic for the management of CAP in an outpatient setting.

Table 3: Preferences of nebuliation

Speciality	Doctors recommendation for nebulization for management of community-acquired pneumonia			
	Yes	No	Not answered	total
General physicians	58	36	5	99
Pediatricians	17	9	1	27
General practitioner	249	50	1	300
Resident Medical Officer (RMO)	42	8	0	50
Chest specialist	13	11	0	24
total	379	114	7	500
percentage	76%	23%	3%	100%

Table 4: Antibiotic monotherapy in adults

Speciality	Antibiotic monotherapy in adults in outpatient setting																
	1	3	4	5	6	7	8	10	11	12	19	20	25	26	29	30	total
General physicians	11	18	34	15	5	0	3	0	0	3	0	6	1	2	1	0	99
pediatricians	5	3	10	1	1	0	6	0	0	0	0	1	0	0	0	0	27
General practitioner	17	52	85	70	2	2	18	0	7	16	2	18	2	8	0	1	300
RMO	1	8	22	11	3	0	1	1	0	0	0	3	0	0	0	0	50
Chest specialist	6	4	4	8	0	0	1	0	0	0	0	1	0	0	0	0	24
total	40	85	155	105	11	2	29	1	7	19	2	29	3	10	1	1	500
percentage	8	17	31	21	2.2	0.4	5.8	0.2	1.4	3.8	0.4	5.8	0.6	2	0.2	0.2	100%

Table 5: Antibiotic monotherapy in children

Speciality	Monotherapy of antibiotic in children for treatment of community-acquired pneumonia															
	1	3	4	5	6	7	8	10	11	12	20	25	26	28	29	total
G. Physician	15	11	27	21	9	0	2	3	0	0	5	1	4	0	1	99
Pediatrician	7	4	7	1	2	0	0	0	0	0	0	0	0	6	0	27
G. Practitioner	50	59	74	46	20	5	4	0	7	8	22	2	3	0	0	300
RMO	1	10	11	12	2	0	1	1	0	0	11	0	0	1	0	50
Chest Specialist	1	4	8	9	1	0	0	0	0	0	1	0	0	0	0	24
total	74	88	127	89	34	5	7	4	7	8	39	3	7	7	1	500
%	14.8	17.6	25.4	17.8	6.8	1	1.4	0.8	1.4	1.6	7.8	0.6	1.4	1.4	0.2	100%

Table 6: Duration of antibiotic therapy

Speciality	Duration of antibiotic therapy for the management of cap					
	One week	Two week	Three week	Four week	No answer	total
G. Physicians	12	60	9	18	0	99
Pediatrician	5	13	6	3	0	27
G. Practitioner	51	166	49	31	3	300
RMO	17	26	2	4	1	50
Chest Specialist	2	13	4	4	1	24
total	87	278	70	60	5	500
percentage	17.4	55.6	14	12	1	

DISCUSSION

Clinical review is a valuable device to recognize the pitfalls in the administration of sicknesses and by amend the insufficiency it aides enhance understanding care. It, likewise, helps in enhancing the scholarly environment in any division and institution. The administration of CAP is a sufficiently basic and critical issue in intense medication that warranted the improvement of review measures of the methodology of consideration and result to assess the nature of tend to CAP. With the expanding expense of therapeutic consideration and the late cuts on the monetary allowance of the bureau of health, it is a guarantee that restorative trading and lending are adjusted by great medicinal care. on the other hand, absence of a standardized, evidence based arrangement for administration of any clinical condition may prompt to sub institutionalize consideration of patients because of deficient data and poor training [15] Balanced medication utilization happens when a fitting medication is recommended and directed as per the suitable measurement regimen and the medication ought to be moderate, accessible, apportioned effectively, in right measurements at satisfactory time interims.

In our study, the current trend of community-acquired pneumonia treatment in an outpatient setting in Karachi was determined. This trend was determined by a questionnaire which consists of different questions related to the practices of doctors for treatment of community-acquired pneumonia. This questionnaire was filled by many specialties of doctors (General practitioner, General Physicians, Chest specialist, Pediatricians and Resident medical officer (RMO). In the 1st question when the doctors were asked for laboratory test they recommend for the diagnosis of community-acquired pneumonia in 1st visit. Majority of doctors (33.8%) recommend complete blood count and chest x-ray for diagnosis of cap on 1st visit of a patient to their clinic. Our study emphasized that majority of the doctors recommend chest x-rays and complete blood count for the diagnosis of community-acquired pneumonia to the patient. These results are similar to a study done on adult patients a questionnaire based study in which physicians were additionally asked to indicate, from a list of tests, how often (always, usually, occasionally, rarely, never) they normally request each test when they suspect an older adult has CAP; Although over 90% of family and ER physicians always or usually ordered chest radiographs, ER physicians were significantly more likely ($p = 0.01$) than family physicians to always request chest x-rays (92% vs 51% respectively). ER physicians were as well more likely to always or usually order complete blood count (92%) and pulse oximetry (100%) than family physicians (52% and 24% respectively). In another study, the author concludes that there were no single items in the clinical examination whose presence or absence would reliably rule in or rule out the diagnosis of pneumonia without the use of radiography [16].

The decision to proceed to radiography in a patient suspected of having pneumonia should be driven by the probability of the disease. The sensitivity and specificity of the pneumonia on a chest radiograph.[17]. Advised diagnostic tests for etiology by IDSA guideline. Patients with CAP should be investigated for specific pathogens that would significantly alter standard management decisions, when the presence of such pathogens is suspected based on clinical and epidemiologic clues. (Strong recommendation; level II evidence.) Recommendations for diagnostic testing remain controversial. The overall low yield and infrequent positive impact on clinical care argue against the routine use of common tests, such as blood and sputum cultures.[18]. where as in children blood cultures should not be routinely performed in nontoxic, fully immunized children with CAP managed in the outpatient setting. (Strong recommendation; moderate-quality evidence). Blood cultures should be obtained in children who fail to demonstrate clinical improvement and in those who have progressive symptoms or clinical deterioration after initiation of antibiotic therapy (strong recommendation; moderate-quality evidence [19].

In the next question recommendation of nebulization for the treatment of community-acquired pneumonia from different specialties of doctors were asked, majority of (76%) of doctors recommend nebulization for the prevention of community-acquired

pneumonia disease. It supported by another study that antibiotic therapy is the mainstay of treatment of bacterial pneumonia. However, patients who have bronchospasm with infection benefit from inhaled bronchodilators, administered by means of a nebulizer metered-dose inhaler [20]. According to a BTS guideline routine airway, clearance has not been shown to improve Outcome [21] and according to a study nebulized bronchodilators or saline does not improve the outcome of CAP. There is no evidence to support the use of oral or inhaled corticosteroids in CAP [22].

Trend of management of community-acquired pneumonia in adult in the next question preferred choice of antibiotic monotherapy in adult was asked by different specialties of doctors in outpatient setting. It means that the highest frequency of antibiotic monotherapy in adult and elderly is clarithromycin (31%), secondly (levofloxacin=21%) and thirdly (co-amoxiclave 17%) is recommended by distinct specialties of doctors in adults, and according to the study conducted through a questionnaire from GP in the patient of different age group stated that out of 149 of 33(22%) patients treated with amoxicillin alone. Out of 143 of 49(34%) patients treated with amoxicillin-clavulanic acid combination and macrolide out of 143 of 23(16%) were prescribed.[23] Macrolide use 44% in 2002, amino penicillin use (9%), but cephalosporin uses to 4%). Of note, fluoroquinolone use in the 18- to 44-year age 2002 to (30%). [24]. In another study evaluate antibiotic trend A total of 31, 940 subjects received outpatient antibiotic treatment for CAP, of which 31, 528 (98.7%) were healed with a singular antibiotic. Commonly used agents included new macrolides (clarithromycin/azithromycin) (32.1%), erythromycin (26%), fluoroquinolones (12.6%), penicillin (11.4%) and 2nd/3rd generation cephalosporin (8.3%). Approximately 54% of those obtaining a single antibiotic received a confined agent and the proportion of subjects obtaining a confined antibiotic increased in each fiscal year from 34.2% in 1996/7 to 75.2% in 2001/02. This was largely due to a decreased use of erythromycin and penicillin's coupled with an increased use of fluoroquinolones and clarithromycin/azithromycin. Studies of outpatient treatment of CAP in both the U. S. and Canada have reported a high preference for levofloxacin and extended-spectrum macrolides, even for subjects with no co-morbidities[25]. For patients treated in the community, amoxicillin remains the preferred agent at a dose of 500 mg three times daily. Either doxycycline or clarithromycin is appropriate as an alternative choice, and for those patients who are hypersensitive to penicillin [21]. Previously healthy and no risk factors for drug-resistant *S. pneumoniae* (DRSP) infection: Macrolide (azithromycin, clarithromycin, or erythromycin) (strong recommendation; level I evidence). Doxycycline (weak recommendation; level III evidence). Existence of co morbidities, such as chronic heart, lung liver, or renal disease; diabetes mellitus; alcoholism; malignancies; asplenia; immunosuppressing conditions or use of immunosuppressing drugs; use of antimicrobials within the previous 3 months (in which case an alternative from a different class should be selected); alternatively other risks for DRSP infection A respiratory fluoroquinolone (moxifloxacin, gemifloxacin, or levofloxacin (750 mg) (strong recommendation; level I evidence)[18].

In the next question, preferred choices of antibiotic monotherapy in children in community-acquired pneumonia were asked by different specialties of doctors. The highest frequency of monotherapy of antibiotic in children is ampicillin 14.8%, clarithromycin (25.4%), levofloxacin(17.8%), co-amoxiclave 17.6%. in a study conducted to determine the Variability in Pediatric Infectious Disease Consultants' Recommendations for Management of Community-Acquired Pneumonia Among these, 27 (21%) recommended either ampicillin or ampicillin/sulbactam as the sole agent for uncomplicated CAP while 100 recommended another regimen, in a study conducted in magnolia in which the prescribing pattern for community-acquired pneumonia was A total of 1100 drugs were prescribed for the 394 participants, with the most commonly prescribed being amino penicillin (10.4% for adults and 18.3% for children) [26]. A similar study conducted d examined trends in antibiotic prescribing for CAP. Data from 2006 -2007 were there used to study factors associated with broad-spectrum antibiotic prescribing. Antibiotics commonly prescribed for CAP included macrolides (34% of patients overall), cephalosporin (22% overall), and penicillin (14% overall).

Cephalosporin use increased significantly between 2000 and 2007. Broad-spectrum antibiotics, particularly macrolides, were frequently prescribed despite evidence that they provide a little benefits over penicillin [27]. Antimicrobial therapy is not routinely required for preschool-aged children with CAP, because viral pathogens are responsible for the great majority of clinical disease. (strong recommendation; high-quality evidence) Amoxicillin should be used as first-line therapy for previously healthy, appropriately immunized infants and preschool children with mild to moderate CAP suspected to be of bacterial origin [19]. WHO criteria are amoxicillin and ampicillin injectables and ceftriaxone injectables preferred choice for management of CAP in outpatient setting in children [28].

In the next question distinct specialties of doctors were asked their preferences for Duration of treatment in community acquired pneumonia patient majority reply generally they recommend two week duration of antibiotic therapy for treatment of CAP. In a study conducted in Spain in Barcelona this was population based study of the cost of care for community acquired pneumonia the study population consisted of 224 patients with community-acquired pneumonia, There were 126 males and 98 females with a mean±SD age of 55.1;20.5 yrs. Patients aged>65 yrs accounted for 37% of cases A total of 134 (59.8%) patients were treated as inpatients and 90 (40.2%) as outpatients The duration of treatment was 14.7;6.1 days without significant differences in relation to site of care.[29]. Another study a prospective survey involving a group of 95 general practitioners (GPs) in France was conducted to describe antibiotic therapy prescribed for outpatients with community-acquired pneumonia (CAP). Mean±SD duration of antibiotic therapy for the 136 outpatients was 13.7±5.8 days (range: 5–40 days), longer ($p=0.0003$) in patients who received a second-line therapy (16.7 days) than others (9.6 days). Mean±SD duration of treatment beyond apyrexia, was 9.6±5.4 days [23]. Comparing the studies with a standard guideline as IDSA recommends treatment courses of 10 days has been best studied, although shorter courses may be just as effective, particularly for more mild disease managed on an outpatient basis. (Strong recommendation; moderate-quality evidence) Infections caused by certain pathogens, notably CAMRSA, may require longer treatment than those caused by *S. pneumoniae*. (strong recommendation; moderate-quality evidence) in children). In adult IDSA recommend Patients with CAP should be treated for a minimum of 5 days (level I evidence), should be a febrile for 48–72 h, and should have no more than 1 CAP-associated sign of clinical instability before discontinuation of therapy (level II evidence). (Moderate recommendation.) A longer duration of therapy may be needed if initial therapy was not active in the identified pathogen or if it was complicated by extra pulmonary infection, such as meningitis or endocarditic. (Weak recommendation; level III evidence [18]. According to BTS guideline. For patients managed in the community, and for most patients admitted to hospital with low or moderate severity and uncomplicated pneumonia, seven days of appropriate antibiotics is recommended [21]. This deviation from the recommended guideline result excess cost and inappropriateness of the management of the diseases.

CONFLICT OF INTERESTS

Declared None

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