ORIGINAL ARTICLE

Profile of Patients with Pneumonia According to Acute Respiratory Infections (A.R.I. Programme of W.H.O) from 2 to 60 Months of Age

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ABSTRACT

Objectives: To observe usefulness of ARI program in a tertiary care center.
Patients and methods: A total of 200 patients were included in the study, who presented with cough and respiratory distress in Emergency department of Children hospital, Lahore. Study was conducted in months of January and February, 2010.
Inclusion criteria: All patients from 2 months of age to 60 months were included who presented with cough and respiratory distress.
Exclusion criteria: Patients with congenital diseases. Patients who have any other systemic disease, Patients who are known cases of hyper-reactive airway disease. All patients included in the study were analyzed according to WHO A.R.I. program. All the data was recorded in SPSS program version 10 and different factors were analyzed.
Results: A total of 200 patients were included in the study. 46.5% (93) were males and 53.5% (107) were females. Patients were divided into sub-groups according to ARI program. Patients from 2-12 months of age were 75.5% (151) and patients from 12-60 months of age were 24.5% (49). Following symptoms and signs were observed and documented in all the patients. Not able to drink, convulsions, abnormally sleepy or difficult to awake, stridor in calm child, clinically severe malnutrition, chest indrawings, fast breathing (50 /min or more if child is 2 months to 12 months of age, 40/minute or more if child from 12 to 60 months of age.
Conclusion: Guidelines/observations of ARI Program are very important to screen out cases of pneumonia. all the paramedical staff should be given training for it, especially in primary health care areas where trained staff and laboratory back-up is not available.
Key words: ARI program, pneumonia. Respiratory infections.

INTRODUCTION

Pneumonia is an inflammatory condition of the lung. It is often characterized as including inflammation of the parenchyma of the lung (That is, the alveoli) and abnormal alveolar filling with fluid (consolidation and exudation)

The alveoli are microscopic air filled sacs in the lungs responsible for gas exchange. Pneumonia can result from a variety of causes, including infection with bacteria, viruses, fungi, or parasites, and chemical or physical injury to the lungs. Its cause may also be officially described as unknown when infectious causes have been excluded.

Typical symptoms associated with pneumonia include cough, chest pain, fever, and difficulty in breathing. Diagnostic tools include x-rays and examination of the sputum. Treatment depends on the cause of pneumonia; bacterial pneumonia is treated with antibiotics. Pneumonia is common occurring in all age groups, and is a leading cause of death among the young, the old, and the chronically ill[1,2].

In children, etiologic agent, age of the patient, and underlying illnesses all affect the historical features of the illness. The infant may present with tachypnea; signs of respiratory distress, such as grunting, flaring, and retractions; lethargy; poor feeding; or irritability. Fever may not be present in newborns; however, hypothermia and temperature instability may be observed. Cyanosis may be present in severe cases. Nonspecific complaints, such as irritability or poor feeding, may be the presenting symptoms. Cough may be absent in the newborn period. Early in the physical examination, identifying and treating respiratory distress, hypoxemia, and hypercarbia is important. Signs such as grunting, flaring, severe tachypnea, and retractions should prompt the clinician to provide immediate respiratory support. An assessment of oxygen saturation by pulse oximetry should be performed early in the evaluation of all children with respiratory symptoms Auscultation is perhaps the

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most important portion of the examination of the child with respiratory symptoms. The sine qua non for this disease has always been the presence of crackles or rales. Although often present, focal crackles as a stand-alone physical examination finding is neither sensitive nor specific for the diagnosis of pneumonia.[3,4,5] Additionally, not all children with pneumonia have crackles. Affected infants commonly present within the first few hours after birth, but if infection is acquired during the delivery, the presentation may be delayed.

In the young infant, aged 1-3 months, continued concern about perinatally acquired pathogens mentioned above as well as the unusual Listeria monocytogenes remains. However, most pneumonia in this age group is community acquired and involves Streptococcus pneumoniae, Staphylococcus aureus, and non-typeable Haemophilus influenzae. Streptococcus pneumoniae is by far the most common bacterial pathogen in this age group. Infection with Staphylococcus aureus may be complicated by lung abscess, parapneumonic effusions, and empyema [7] Viruses are a common cause of pneumonia among toddlers and preschoolers. The usual culprits are those previously discussed. Tsolia et al identified a viral infection among 65% of hospitalized children with community-acquired pneumonia.[8] Streptococcus pneumoniae is by far the most common bacterial cause of pneumonia. Among hospitalized children, Streptococcus pneumoniae accounts for 21-44% of disease.[9,10,11] In a recent study to evaluate the effectiveness of heptavalent pneumococcal conjugate vaccine in prevention of pneumonia in children younger than 5 years, Black et al showed a 32.2% reduction in the first year of life and a 23.4% reduction between 1-2 years, but only a 9.1% reduction in children older than 2 years. [12, 13] Children in this age group are also at risk for infection by M pneumoniae.

M pneumoniae is a frequent cause of pneumonia among older children and adolescents. Mycoplasma accounts for 14-35% of pneumonia hospitalizations in this age group.[14]

Very few laboratory studies are particularly useful in the evaluation of the child with pneumonia. Although it is true that many of the etiologic organisms may be identified by culture or immunofluorescent antibody techniques, in practice, these are too costly and time consuming for routine use. Furthermore, the results of such tests are rarely available in less than several hours, thus making them even less useful to the emergency clinician.

In cases of pneumococcal pneumonia, the WBC count is often elevated. Prior to widespread pneumococcal immunization, Bachur et al observed that approximately 25% of febrile children with a WBC count >20,000/mm^3, but without lower respiratory tract findings on examination, had radiographic pneumonia (termed occult pneumonia).[15] Although blood testing was obtained less frequently in the post-Prevnar era, recent studies by the same group demonstrated that leukocytosis was still associated with occult pneumonia[16,17]. Bacteremia is rarely associated with pneumonia in children, and blood culture is not routinely required in immunocompetent children. Blood cultures should be obtained when the patient is critically ill, immunocompromised, or has persistent symptoms. Additionally, blood cultures are useful in patients with high fever and large areas of consolidation—mostly to make a microbiologic diagnosis. In the cooperative older child with a productive cough, a sputum Gram stain may be obtained. In order to be useful, the specimen must contain less than 10 epithelial cells and more than 25 WBC per high-powered field. Very few children are able to cooperate with such a test.

PATIENTS AND METHOD

A total of 200 patients were included in the study, who presented with cough and respiratory distress in Emergency department of Children hospital, Lahore. Study was conducted in months of January and February, 2010. All patients from 2 months of age to 60 months were included who presented with cough and respiratory distress. Patients with congenital diseases, patients who have any other systemic disease and s who are known cases of hyper-reactive airway disease were excluded from the study. All patients included in the study were analyzed according to WHO A.R.I. program. All the data was recorded in SPSS program version 10 and different factors were analyzed.

RESULTS

A total of 200 patients were included in the study. 46.5% (93) were males and 53.5% (107) were females (table-3). Patients were divided into sub-groups according to ARI program. Patients from 2-12 months of age were 75.5% (151) and patients from 12-60 months of age were 24.5% (49) (table-4).

Table-1: Statistics

		age of baby	**sex**
N	Valid	200	200
	Missing	0	0
Mean		1.2450	1.5350
Std. Deviation		.4312	

Following symptoms and signs were observed and documented in all the patients. Not able to drink, convulsions, abnormally sleepy or difficult to awake, stridor in calm child, clinically severe malnutrition, chest indrawings, fast breathing (50 /min or more if child is 2 months to 12 months of age, 40/minute or more if child from 12 to 60 months of age (table 5-11).

Table-2 (Statistics)

		not able to drink	abnormally sleepy	Severe malnutrition	fast breathing	convulsions	chest indrawing	stridor in calm child
N	Valid	200	200	200	200	200	200	200
	Missing	0	0	0	0	0	0	0
Mean		.2900	.6300	.9000	.6950	.2600	.6800	9.500E-02
Median		.0000	1.0000	1.0000	1.0000	.0000	1.0000	.0000
Std. Deviation		.4549	.4840	.3008	.4616	.4397	.4676	.2940
Variance		.2069	.2343	9.045E-02	.2130	.1934	.2187	8.641E-02

Table-3: Age of patients

Valid	Frequency	%age	Valid %age	Cumulative Percent
2-12 months	151	75.5	75.5	75.5
>12mo - 60 months	49	24.5	24.5	100.0
Total	200	100.0	100.0	

Table 4: Sex

Valid	Frequency	%age	Valid %age	Cumulative Percent
male	93	46.5	46.5	46.5
female	107	53.5	53.5	100.0
Total	200	100.0	100.0	

Table 5: Notable to drink

Valid	Frequency	%age	Valid %age	Cumulative Percent
no	142	71.0	71.0	71.0
yes	58	29.0	29.0	100.0
Total	200	100.0	100.0	

Table 6: Abnormally sleepy

Valid	Frequency	%age	Valid %age	Cumulative Percent
no	74	37.0	37.0	37.0
yes	126	63.0	63.0	100.0
Total	200	100.0	100.0	

Table 7: Severe malnutrition

Valid	Frequency	%age	Valid %age	Cumulative Percent
no	20	10.0	10.0	10.0
yes	180	90.0	90.0	100.0
Total	200	100.0	100.0	

Table 8: Fast breathing

Valid	Frequency	%age	Valid %age	Cumulative Percent
no	61	30.5	30.5	30.5
yes	139	69.5	69.5	100.0
Total	200	100.0	100.0	

Table-9: Convulsions

Valid	Frequency	%age	Valid %age	Cumulative Percent
no	148	74.0	74.0	74.0
yes	52	26.0	26.0	100.0
Total	200	100.0	100.0	

Table 10: Chest indrawing

Valid	Frequency	%age	Valid %age	Cumulative Percent
no	64	32.0	32.0	32.0
yes	136	68.0	68.0	100.0
Total	200	100.0	100.0	

Table 11: Stridor in calm child

Valid	Frequency	%age	Valid %age	Cumulative Percent
no	181	90.5	90.5	90.5
yes	19	9.5	9.5	100.0
Total	200	100.0	100.0	

DISCUSSION

Pneumonia is a form of acute respiratory infection that affects the lungs. The lungs are made up of small sacs called alveoli, which fill with air when a healthy person breathes. When an individual has pneumonia, the alveoli are filled with pus and fluid, which makes breathing painful and limits oxygen intake.

Pneumonia is the single largest cause of death in children worldwide. Every year, it kills an estimated 1.8 million children under the age of five years, accounting for 20% of all deaths of children under five years old worldwide. There are some 155 million cases of childhood pneumonia every year in the world. Pneumonia affects children and families everywhere, but is most prevalent in South Asia and sub-Saharan Africa.

Pneumonia is mainly a clinical diagnosis. Although a number of modalities are available to support the diagnosis. In rural areas or in under-

developed countries even these modalities are not available. To simplify the diagnosis of pneumonia WHO has introduced the ARI Program. This program was introduced for primary health levels so that without the involvement of expert professionals these cases can be identified at the earliest. So that referrals can be in time and no patient suffer due to late referral. In this program paramedical staff needs a careful observation of the patient. By noting the symptoms of patient, he can categorize the severity of illness. Categorization helps in management and also how quickly patient needs referral. In a study conducted by Mtango FD et al; in district Bagamoyo, Tanzania, they achieved a 30% reduction in mortality due to acute respiratory infection in children less than 5 years of age in the 183-86 period by implementing on WHO-ARI program. They trained village health workers to refer seriously ill children to dispensaries and to educate mothers on early recognition of signs and symptoms of infection[18].

The guidelines of ARI Program rely just on clinical signs, as laboratory, X-ray or other diagnostic facilities are most often unavailable at primary health care level in developing countries. The signs and symptoms selected in the algorithm must be sensitive and specific. The concern is to avoid missing cases which have the condition while at the same time avoiding over-treatment and over-referral of cases which do not have the condition. The guidelines must be practical to be used reliably by primary health care providers and must then include a limited number of clinical signs that can be learnt during a short training course. It should be emphasised that the guidelines are action-oriented: rather than leading to specific diagnoses, the guidelines aim at assisting the health provider in identifying ("classifying") conditions in three main groups: those which require urgent referral, treatment or counselling on home care. Any additional signs which do not improve the performance of the guidelines should not be included

The guidelines are meant to be used by a wide range of health providers working at primary health care level. Their skills vary and guidelines requiring simple skills are more likely to be used properly than those relying on more complex skills. The assessment of signs and treatment approaches should be easy to teach—and to be learnt— within the short duration of an in-service training course. However simple the guidelines may appear, they must enable the delivery of the best possible care, especially the detection, pre-referral treatment and urgent referral of the most severe cases. In a study conducted by Gadomiski AM et al; in Egypt. It was to assess two indicators of acute respiratory infections; the respiratory rate and chest indrawings. They observed that their Ministry of health Physicians were unable to recognise these two indicators as shown in WHO video-tape. They also observed that respiratory rate should be counted for 60 seconds. They concluded that primary health workers need to be carefully trained in assessing respiratory rate and chest in drawings. If these clinical findings are to be used as reliable indicators in pneumonia treatment algorithms.[19]

In our study, we have observed that 29% of patients were not able to drink, 63% were abnormally sleepy, 9.5% had stridor, 9% were malnourished, 68% had chest-in drawings and 119.5% had fast breathing. It was observed that by noting these findings diagnosis of pneumonia was made successfully and patients were treated accordingly. Diagnoses in all these cases were made without the help of laboratory investigations and x-rays chest. However, later on, just for academic purposes and to confirm the diagnoses, we took the help of investigations. But in any place where these facilities are not ` available, we can rely on these observations only. This helps to save resources, both time and material resources. In another study conducted by Qazi SA et al; in Children Hospital, Islamabad. Pakistan concluded that by implementing ARI Program, the use of antibiotics in the outpatient department decreased from 54.6% to 22.9%. the case fatality rate in children admitted with ARI fell from 9.9% to 4.9%, while the overall case fatility rate fell from 8.7% to 6.2%[20].

CONCLUSION

1. Pneumonia is a lethal disease.
2. Its early detection and treatment is very important.
3. Guidelines/observations of ARI Program are very important to screen out cases of pneumonia.
4. all the paramedical staff should be given training for it, especially in primary health care areas where trained staff and laboratory back-up is not available.
5. In this way, we would be able to decrease the mortality and morbidity of patients suffering from pneumonia.

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