Predictors of admission in patients with acute Bronchiolitis

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ABSTRACT

Background: Acute viral bronchiolitis represents the most common lower respiratory tract infection in infants and young children less than 24 months and is associated with substantial morbidity and mortality. Respiratory syncytial virus is the most frequently identified virus, but many other viruses may also cause acute bronchiolitis. Most children with bronchiolitis have a self-limiting mild disease and can be safely managed at home with careful attention to feeding and respiratory status. Criteria for referral and admission vary between hospitals as do clinical practice in the management of acute viral bronchiolitis, Supportive care, including administration of oxygen and fluids, is the cornerstone of current treatment. **Aim:** To identify the epidemiological profile of babies less than 2 years with bronchiolitis, clinical characteristics of babies with bronchiolitis in respect to the main symptoms, signs and clinical presentations and the factors that affect disposition of the patient with acute bronchiolitis. **Patient and Method:** Design: A prospective observational case series study. Setting: Emergency unit in Al-Khansaa Teaching Hospital. Study period: one year (1/October/ 2012 – 30/September/ 2013) Sample size: 84 patients were enrolled in this study. Inclusion criteria: 1-first attack of acute wheeze due to bronchiolitis.2-age 2years or younger. Exclusion criteria: 1. patients with more than one attack wheezes.2.wheezes due to other cause (pneumonia).3.age more than 2 years. **Result:** A Total of 84 patients with 1st attack wheeze in less than 2 years identified. The main age was 8.2±5.77months, and the peak age was 6 months.53 (63.1%) male, and 31(36.9%) female and ratio of 1.7:1.and the majority were mature babies, came from urban area more than rural area. The comparison done concentrated on symptoms, signs, and radiological findings between babies younger and older than 6months age, and studied either to hospital or not and concentrated these findings had role as an indicator for admission on heart rate, respiratory rate and SPO2, The results indicated that poor feeding, irritability, runny nose, cough and shortness of breath all of these symptoms consider a good indicators for admission in both age groups. Severe retraction, rhonchi, and temperature more than 38.1 C, all of these physical findings consider good indicators of admission in both age groups. While fine rales and cyanosis are good indicators in babies younger than 6 months only. Radiological findings had no role in assessing admission of the patients to hospital. Respiratory rate (tachypnea)>60 bpm, and SPO2<94 are consider a significant indicators in both age groups, while heart rate >160 BPM consider significant indicator only in babies older than 6 months of age. Of all 84 patients admitted to emergency unit, only 63(75%) of them were admitted to hospital and the remaining were discharged. **Conclusion:** Indications of admission can be assessed by many symptoms (poor feeding, irritability, runny nose, cough, and SOB) and physical signs (Rhonchi, severe retraction, temperature >38.1 c, RR>60bpm, and SPO2<94), so We recommended carrying out serial checking SPO2 by pulse oximetry, and to conduct arterial or capillary blood gas analysis for the severely ill patients to assess the severity of the disease and its complications and treatment procedures.

Keywords: Airway Obstruction, Admission to Hospital, Viral Bronchiolitis.

INTRODUCTION

Bronchiolitis is the term used for first-time wheezing with a viral respiratory infection in children less than 2years age. The distinctive element of acute bronchiolitis is lower respiratory tract inflammation with airway obstruction resulting from swelling of small bronchioles leading to inadequate expiratory airflow [1].

Most severe cases of bronchiolitis occur among infants, probably as a consequence of smaller airways and an immature immune system. Bronchiolitis is potentially life-threatening. Bronchiolitis is the most common disease of the lower respiratory tract in infants, resulting from inflammatory obstruction of the airways [2].

Acute bronchiolitis is characterized by bronchiolar obstruction with edema, mucus, and cellular debris. Even minor bronchiolar wall thickening significantly affects airflow because resistance is inversely proportional to the 4th power of the radius of the bronchiolar passage. Resistance in the small air passages is increased during both inspiration and exhalation, but because the radius of an airway is smaller during expiration, the resultant respiratory obstruction leads to early air trapping and over inflation [3].

Viruses penetrate the terminal bronchiolar epithelial cells, causing direct damage and inflammation in the small bronchi and bronchioles. Limited information are available on the pathology of typical cases because most affected infants

recover. However, based upon biopsy or autopsy samples in severe cases and animal studies, pathologic changes begin 18 to 24 hours after infection and include bronchiolar cellnecrosis, ciliary disruption, and peribronchiolar lymphocytic infiltration. Edema, excessive mucus, and sloughed epithelial cells lead to obstruction of small airways and atelectasis [4,5].

Typically, the first sign of infection in infants with RSV is rhinorrhea. Cough may appear simultaneously but more often does so after an interval of 1-3 days, at which time there may also be sneezing and a low-grade fever. Soon after the cough develops, the child begins to wheeze audibly. If the disease is mild, the symptoms may not progress beyond this stage. Auscultation often reveals diffuse fine inspiratory crackles and expiratory rhonchi. Rhinorrhea usually persists throughout the illness, with intermittent fever [6].

Risk factors predisposing to serious disease include prematurity (<37 weeks)., Cardiopulmonary disease., Immune deficiency., Metabolic disease., Age less than 3 months during infection., Male gender., Infants who have not breast fed., Passive exposure to tobacco smoke., Crowding (2 or more children sleeping in the same room with the infected child)., Family history of atopy or asthma. Low socioeconomic status., Infection with the A subgroup of RSV. [5]

The diagnosis of bronchiolitis is clinical based on history and finding on physical examination. The diagnosis may be supported by radiographic or laboratory studies, but these tests are not necessary for diagnosis [7].

Routine laboratory tests not indicated in the infant with bronchiolitis who is comfortable in room air, well hydrated, fed adequately. The white cell count is normal or elevated, and the differential count may be normal with either a neutrophilic or mononuclear predominance [8].

Chest radiographs of infants hospitalized with RSV bronchiolitis are normal in approximately 10% of cases, air trapping or hyper expansion of the chest is a hallmark of RSV infection and occurs in approximately 50%.Peribronchial thickening or interstitial pneumonia is seen in 50-80%, Segmental consolidation occurs in 10-25% particularly in younger infants and most commonly in the right upper or middle lobe [9].

Oxygen saturation: pulse oximetry should be performed for every child who attends hospital with acute bronchiolitis, lower oxygen saturation level on hospital admission (<=94) predict more severe disease and longer hospital stay [10].

Blood gases: the degree of hypoxemia or hypercarbia may have influenced the decision to use oxygen and the concentration used a normal or elevated blood CO_2 value in a patient with a markedly elevated respiratory rate is a sign of respiratory failure [11].

RSV may be diagnosed by isolation of the virus or by detection of viral antigen in respiratory secretion [12]. An aspirate of mucus or nasopharyngeal wash from the child's posterior nasal cavity is the optimal specimen even if the disease appears to be limited to the lower respiratory tract [13].

Nasopharyngeal swab is also acceptable, but a nasal wash is more sensitive than a nasopharyngeal swab specimen in the recovery of RSV [14].

Finally, children with underlying conditions may have a superimposed acute episode of bronchiolitis. In some cases, a chronic cardiopulmonary disorder is unrecognized before the acute episode. The clinical course of bronchiolitis in these children tends to be severe and may require prolonged hospitalization.[15]

AIM OF THE WORK

To identify the epidemiological profile of babies less than 2 years with bronchiolitis. To describe the clinical characteristics of babies with bronchiolitis in respect to the main symptoms, signs and clinical presentations. To study the factors that affect disposition namely the admission of the patient with acute Bronchiolitis. To study the treatment and follow up on the patients presented with acute bronchiolitis.

PATIENTS AND METHODS

Design: A prospective observational case series study.

Setting: Emergency unit in Al-Khansaa Teaching Hospital.

Study period: one year (1/October/ 2012 – 30/ September/ 2013)

Samplesize: 84 patients were enrolled in this study.

Inclusion criteria: 1- First attack of acute wheeze due to bronchiolitis. 2-Age 2years or younger.

Exclusion criteria: 1- Patients with more than one attack wheezes. 2- Wheezes due to other cause(pneumonia). 3- Age more than 2 years.

Intervention: Eighty four patients were collected, age younger than 2 years,30 patients <6 months and 54 patients > 6 months, in both sex and from any residence. Their symptoms (fever, cough, SOB, poor feedings, runny nose, and irritability), signs (temperature, fine rales, rhonchi, retraction, nasal flaring, cyanosis, and apnea), and radiological findings (hyperinflation, consolidation, segmental pneumonia and normal), and the effect of these findings on the admission to hospital, also relations of these signs on decision of admission to hospital.

Statistical Analysis: We used the chi-square test to analyze categorical variables through two way java statistics contingency analysis. The result considered statistically significant if p-value was ≤ 0.05.

Ethical Evaluation or Approval This study was approved by the Local Scientific Council of Arab Board of Health Specializations of Emergency medicine in Iraq, and Mosul Ethical Research Committee, Directorate of Health in Ninavah.

RESULTS

This study include Eighty Four children, male were 53(63.1%), female 31 (36.9%), and the male to female ratio was 1.7:1.

4.1-Age and sex:

Table (1): Age and sex distribution.

| Age(months)	No.	%	Male		Female	
			No.	%	No.	%
1-0	0	0	0	0	0	0
-2	6	7.1	4	7.55	2	6.45
-3	9	10.7	8	15.1	1	3.2
-4	8	9.5	3	5.7	5	16.13
-5	7	8.3	5	9.4	2	6.45
-6	15	17.8	10	18.8	5	16.13
-7	7	8.3	4	7.55	3	9.67
-8	8	9.5	3	5.7	5	16.13
-9	4	4.76	3	5.7	1	3.2
-10	6	7.1	3	5.7	3	9.67
-11	4	4.76	3	5.7	1	3.2
-12	4	4.76	3	5.7	1	3.2
-24	6	7.1	4	7.55	2	6.45
Total	84	100	53	100	31	100

The peak age was 6 months 15(17.8%).The mean age was 8.2±5.77months; figure (1), table(1).

Disposition:

Regarding the disposition of the 84patients admitted to emergency department with acute bronchiolitis, 63(75%)patients were admitted to hospital.59 (70.2%) of them admitted to wards, and 4 (4.8%)of them to ICU. While the 21(25%) were discharged.
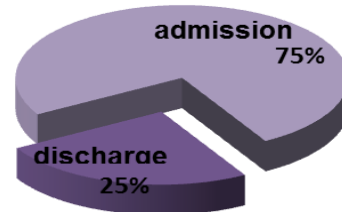
Figure (1): Study disposition of the patients with acute bronchiolitis.
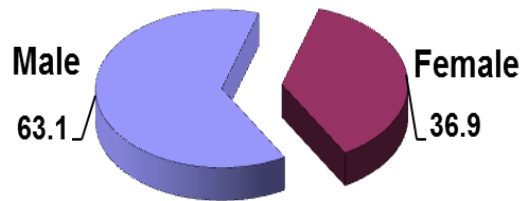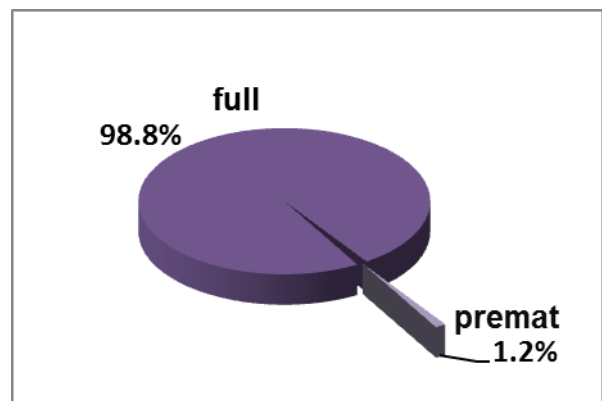

Figure (2): Sex distribution.

Residence:

Regarding their residence, fifty Patients (59.5%) came from urban areas, 34patients (40.5%) came from rural areas.

Gestational Age:

For their gestational age, 83 babies (98.8%) were product of full term delivery, and one baby (1.2%) was a product of premature delivery. Figure (2).

Figure (3): Gestational age distribution.

Smoking and Atopy:

Smoking was present in 40(47.6%) of the parents of babies with acute bronchiolitis, while atopy present in 25(29.7%)of the parents.

Symptoms:

The most common symptom among babies younger than 6 months was Shortness of breath 29(96.7%).27(90%) of them were admitted to the hospital and 2 (6.7%)of them were discharged, and the least was poor feeding 17(56.7%). Regarding most significant of them in admission is poor feeding as shown in table (2).

Table (2): Symptoms study in babies <6 months with total number of 30 patients.

Symptoms		Total Number =54 Patients				
		Number	%	Admission	Discharge	P-Value
Cough	Yes	42	77.8	32	10	0.002**
	No	12	22.2	3	9	
Runny nose	Yes	37	68.5	29	8	0.001**
	No	17	31.5	5	12	
Irritability	Yes	22	40.7	16	6	0.006**
	No	32	59.3	11	21	
SOB	Yes	36	66.7	24	12	0.010*
	No	18	33.3	5	13	
Poor feeding	Yes	26	48.1	24	2	0.000***
	No	28	51.9	11	17	

*=significant, **=highly significant, ***=most significant

The most common symptoms among babies older than6 months was cough 42(77.8%), 32(59.3%) of them were admitted to hospital, 10(18.5%) discharged, while the least common was irritability 22(40.7%) as showed in table (3).

Table (3): Symptoms study in babies more than 6 months with total number of 54 patients and the most common symptom necessitate admission was poor feeding, while SOB was the least.

Symptoms		Total Number =30 Patients				
		Number	%	Admission	Discharge	P-Value
Cough	Yes	25	83.3	18	7	0.028*
	No	5	16.7	1	4	
Runny nose	Yes	18	60	13	5	0.011*
	No	12	40	3	9	
Irritability	Yes	19	63.3	15	4	0.005**
	No	11	36.7	3	8	
S.O.B	Yes	29	96.7	27	2	0.047*
	No	1	3.3	0	1	
Poor feeding	Yes	17	56.7	16	1	0.000***
	No	13	43.3	3	10	

Physical Findings:

Regarding physical findings, Sever retraction was the most common finding in babies < 6 months of age 24(80%), while the most significant in admission group was cyanosis and apnea.

Table (4): Physical finding study in babies < 6 months with total number of 30.

Physical finding		Total Number =30 Patients				
		Number	%	Admission	Discharge	P-Value
Temperature	afebrile	4	13.3	2	2	0.009**
	37.4-38	7	23.3	5	2	
	38.1-39	9	30	8	1	
	>39	10	33.3	9	1	
Fine rale	Yes	21	70	17	4	0.011*
	No	9	30	3	6	
Rhonchi	Yes	23	76.7	16	7	0.010*
	No	7	23.3	1	6	
Sever retraction	Yes	24	80	22	2	0.000***
	No	6	20	1	5	
Nasal flaring	Yes	13	43.3	11	2	0.127
	No	17	56.7	10	7	
Cyanosis	Yes	9	30	9	0	0.031#
	No	21	70	13	8	
Apnea	Yes	2	6.7	2	0	0.863#
	No	28	93.3	20	8	

#The test not applicable because onevalue iszero.

Rhonchi was the most common physical finding in patients > 6 months 46(85.2%).while the most significant sign regarding admission was cyanosis and apnea asshown in table (5).

Table (5): Physical findings study in babies older than 6 months with total number of 54.

Physical finding		Total Number =54				
		Number	%	admission	discharge	p-value
Temperature	Afebrile	2	3.7	0	2	0.002**
	-3837.4	13	24.1	7	6	
	38.1-39	14	25.9	11	3	
	>39	25	46.3	23	2	
Fine rale	Yes	32	59.3	27	5	0.296(ns)
	No	22	40.7	16	6	
Rhonchi	Yes	46	85.2	43	3	0.000***
	No	8	14.8	3	5	
Sever retraction	Yes	34	63	30	4	0.002**
	No	20	37	10	10	
Nasal flaring	Yes	16	29.6	13	3	0.690(ns)
	No	38	70.4	29	9	
Cyanosis	Yes	3	5.6	3	0	0.983#
	No	51	94.4	38	13	
Apnea	Yes	1	1.9	1	0	0.570#
	No	53	98.1	40	13	

# The test not applicable because one of the value is zero.
Ns=not significant

Heart Rate, Respiratory Rate And Spo2.

HR, RR and SPO2 at admission and after treatment (normal saline, albuterol, adrenaline) and the effect of this finding on the decision of admission in babies younger and older than 6months age.

Babies younger than 6 months

A- According to HR we classified the patients in to two groups, 1st group (<160 BPM),

and the 2nd group (>=160BPM) and observe the effect of treatment on them.

After evaluation and comparison of the heart rate between the admitted patients from those who were discharged and calculate the p-value of this comparison it was found that HR is no significant in admission group (0.290) as shown in table (6).

B- Respiratory rate was classified in to two groups, 1st (<60 bpm) and the 2nd (>=60 bpm) and observe the patients at admission and after treatment.

After evaluation of the admitted and discharged patients in this age group and estimation of the p-value, we noticed the p-value of the RR was very significant in admission group (0.035)as shown in table (6).

C- Regarding TheSpo2 we classified patients in to two groups, 1st (<94), and2nd (>=94) and observe the effect of treatment on them.

After evaluation of admitted and discharged patients in this age group and estimation of the p-value, we noted that p-value of the Spo2 was very significant in admission group (0.008) as shown in table (6).

Table (6): Study the effect of treatment on physical findings(HR, RR,SPO2) and decision on admission in babies <6 months.

Physical findings	<6 months(Total Number =30 Patients)					
	HR		RR		SPO2	
	<160	>160	<60	>=60	<94	>94
At admission	13	17	6	24	22	8
After 30 min. post treatment	22	8	13	17	14	16
Admission	15	7	5	13	14	8
Discharge	7	1	8	4	0	8
p-value	0.290		0.035*		0.008**	

Babies older than 6 months

A-According to Heart rate we classified the patients into two groups, 1st(<160 BPM),and2nd (>=160BPM) and observe the effect of treatment(nebulized albuterol or adrenaline) on them.

After evaluation of admitted and discharged patients in this age group and estimation of the p-value, we noticed that p-value of the heart rate is significant in admission group (0.010) as shown in table (7).

B-According to respiratory rate we classified the patients in to two groups,1st (<60bpm), 2nd (>=60 bpm) and observe the effect of treatment (nebulized albuterol or adrenaline) on them.

After evaluation of admitted and discharged patients in this age group and estimation of the p-value, we noticed that p-value of the respiratory rate is significant in admission group (0.013) as shown in table (7).

C-According toSpo2 we classified the patients in to two groups,1st (<94),, and2nd(>=94) and observe the effect of treatment on them.

After evaluation of admitted and discharged patients in this age group and estimation of the p-value, we noticed that p-value of the spo2 is significant in admission group (0.017) as shown in table (7).

Table (7): Study the effect of treatment on physical findings (HR, RR,SPO2) and decision on admission in babies >=6 months.

Physical finding	>6 months (Total Number=54) Patients					
	HR		RR		SPO2	
	<160	>160	<60	>=60	<94	>94
At admission	30	24	18	36	35	19
After 30 min. post treatment	21	33	17	37	28	26
admission	12	29	11	34	25	16
discharge	9	4	6	3	3	10
p-value	0.010*		0.013*		0.017*	

Radiological finding:

Hyperinflation was the most common radiological findings in babies <6months of age 12(41.4%), 9(31%) were admitted and 3(10.3%) were discharged, normal X-ray found in 7(24%), of them, 4(13.7%) were admitted and 3(10.3%) were discharged, interstitial pneumonia 6(7.1%), 5 (17%) of them were admitted and 1 was discharged, lastly consolidation 4(13.7%), all of them were admitted as shown in table (8).

Table (8): Radiological findings in babies younger than 6 months.

Radiological findings		<6months (Total Number 29)				
		Number	%	Admission	Discharge	P-Value
Hyper inflation	Yes	12	41.4	9	3	0.927
	No	17	58.6	13	4	
Interstitial pneumonia	Yes	6	20.7	5	1	0.631
	No	23	79.1	17	6	
Consolidation	Yes	4	13.8	4	0	0.712#
	No	25	86.2	18	7	
Normal	Yes	7	24.1	4	3	0.184
	Abnormal	22	75.9	18	4	

The test not applicable because one value is zero.

Also the same result was obtained from babies older than 6 months, hyperinflation was the

most common radiological findings 21(41.1%), 11(21.6%) of them were admitted, 10(19.6%) were discharged, normal X-ray seen in 12(23.5%) patients, 8 (15.7%) of them were admitted, 4 (7.8%) were discharged, interstitial pneumonia seen in 11(21.6%) patients, 9 (17.6%) of them were admitted,2 (3.9%) were discharged, lastly consolidation seen in7(13.7%), 6 (11.8%)of them were admitted and one (2%)was discharged as shown in table (9).

Table (9): Radiological findings in babies older than 6 months.

Radiological findings		> Than 6months(Total Number=51)				
		Number	%	Admission	Discharge	P-Value
Hyper inflation	Yes	21	41.1	11	10	0.07
	No	30	58.8	23	7	
Interstitial pneumonia	Yes	11	21.6	9	2	0.229
	No	40	78.4	25	15	
Consolidation	Yes	7	13.7	6	1	0.250
	No	44	86.3	28	16	
Normal	Yes	12	23.5	8	4	1.000
	abnormal	39	76.5	26	13	

Comparing the radiological findings of both ages who were admitted to hospital from those who were discharged home and the p-value is calculated and it shows no significant statistical difference between the two groups.

DISCUSSION

In this study, the peak age for acute bronchiolitis was 6 months and the mean age was (8.2± 5.77) months. This finding is close to that found by **Kawes** [16] (7.17±3.73)months, but was relatively more than that reported by **Eser** [17] who found that the peak age was 2 months and the mean age was (5.1± 3.25) months, and **Nazar** [18] found the peak age was 2 months and mean age was (5.1±2.8) months.

Male to female ratio was (1.7:1) and this agrees with **Diyar** work [19] who found male to female ratio was (1.8:1) and in agreement with that found in a a study done by **Cabrerea** [20] in Spain which he found a ratio of 1.7:1 and slightly differ from **Eser** work [17] who found that the ratio was 2.1:1.

Bronchiolitis is more common in urban areas 50(59.5 %) than in rural areas 34 (40.5%), which is similar to **Saud** [21]**.** This may be related to air pollution which may predispose to respiratory disease.

Most of the patients 83(98.8%) were product of full term delivery and one patient was preterm. which is similar to **Nazar.** [18]

Fever was present in 43(51.1%) patients which is similar to **Diyar** [19]; **Orstavik et al.** [22] found that half of cases had fever.

Shortness of breath was present in 29 (96.7%) in patients < 6months and36 (66.7%) in patients >= 6months. similar to **Eser** [17] (68.1%) [17].

Cough was present in 25(83.3%) of patients < 6months and 42(77.8%) of patients >= 6months.Which similar to **Saud** [21] who found cough was present in (79.1%), **Zuhair** [23] found cough was present in (89.3%).

Poor feeding was present in 17 (56.7%) of patients < 6months and 26 (48%) of patients >=6months.similar to **Eser** [17] (51.9%), **Zuhair** [23] (44.6%), and **Saud** [21] (52.5%).

Irritability was present in 19(63.3%) of patients<6 months and 22(40.7%) of patients>=6 months which is similar to **Zuhair** [23] (48.9%), and **Saud** [21] (47.5%) and unlike to **Eser** (79.4%). [17]

Runny nose was present in 18(60%) of patients < 6 months and 37(68.5%) of patients >= 6 months, unlike **Eser** founded it present in (96.9%). [17]

In this study, the respiratory rate (tachypnea)>60 breaths/ minute was present equally or near equal in both ages which is similar to **Diyar** work who found that no significant difference was found between the respiratory ratein patients under six months of age and patients older than six months of age [57] but disagree with that found by **Eser**, **Saud and Holman** works, all of them found that the RR was higher inpatients <6months of age. [17,21]

Temperature (<=38°C) was present in 26(31%) patients with bronchiolitis, while (38.1–39°C) was present in 23 (27.3%) and (>39°C) was present in 35(41.7%) in patients with bronchiolitis. which in close to **Saud** [59] unlike **Eser** [55] who found fever <=38 C was present in (88.1%) and 38.1-39C was present in (8.1%) and >39C was present in (3.8%) of patients with bronchiolitis.

Fever was slightly more in patients >6 months which agree with **Saud** [21] and disagree with Diyar [57] and **Zuhair** [23], both of them found that fever was more in patients younger than 6

months, This difference may be due to different causative agents and different geographical areas.

Cyanosis was present in 9 (30%) of patients in < 6 months and 3(5.6%) of patients in >= 6 months which is slightly lower to **Eser** [17] who found cyanosis presented in (13.8%), and **Zuhair** [63] (16.3%), unlike A.K. **Nazar** [18] who found cyanosis was present in (8%) of patients.

By applying two way contingency table and chi square and estimation of the p-value. The results were not applicable from the practical point of view because one of the data is zero and small sized sample as shown in table (4,5 and 8) and due to this result shows apnea, cyanosis and consolidations are not significant indicator of admission. This result should not be taken in consideration from the practical point of view.

In this study family history of atopy was presented in (29.7%) which is similar to Saud (27.5%) and **Eser** [55] (26.9%) and slightly less than **Diyar** (37%). [19]

X-ray was taken to 80 patients only. Two of the 4 remaining were postponed because these babies were very tired and cannot transfer them without oxygen supply. One discharged on mother's responsibility, and the mother of the last baby refuse to take x-ray to her baby.

Hyperinflation was present in33 (39.3%) of patients, which is similar to study of **Nazar** [18] hyperinflation was present in (46%) of the patients and similar to Zuhair [23] who found it in (38.1%),[56,63] while **Kawes** [16] found that hyperinflation was present in(80%) of patients and Diyarfound that the hyperinflation was present in (64%).

Eriksson *et al.* [24] found that the radiological findings in RSV bronchiolitis are non-specific and include air trapping (61-85%), peribronchial thickening and infiltrate (46-85%), consolidation most often sub segmental (24%), collapse (10-13%) and normal film in (13%).

Interstitial pneumonia was present in 17(20.2%) of patients, while consolidation was present in 11(13.1%), which is near to **Saud** (18.3%) and **Eser** (7.5%) [17,21] and unlike study of **Wenrnan** [25] who found that lobar consolidation in (85.4%).

Normal x-ray finding was present in 19(23.1%) which is similar to **Saud** (24.2%). and **Eser** (16.9%). [17,21]

Regarding the effect of treatment (normal saline, albuterol and adrenaline nebulizer) in patients younger and older than 6 months on HR, RR, SPO2 and the relation between admission and these findings.

There are 27 (32.1%) patients with HR <160 BPM admitted to hospital in younger and older than 6 months.

While there are 36(42.9%) patients with HR >=160 BPM admitted to hospital in younger and older than 6 months.

As regard the heart rate, there were no significant physical findings in admission group in patients younger than 6months (0.290).

While the HR in patients older than 6months was significant physical finding in admission group (0.010).

Regarding the RR <60 bpm, there are 16(19%) patients admitted in both ages. in RR>6o bpm, there are 47 patients admitted in both ages.

The respiratory rate in both ages is considered a significant physical finding for admission to hospital (0.035) and (0.013).

Regarding the SPO2 <94.there are 39(46%) patients admitted in both ages.

While SPO2>=94, there are 24(28.6%) patients admitted in both ages.

The SPO2 in both ages is considered a significant physical finding for admission to hospital (0.008) and (0.017).

CONCLUSION

Bronchiolitis is a common disease of infants lead to a large number of acute admissions to hospital. It usually affects young infants, male more than females, more in urban than in rural areas. Poor feeding, irritability, runny nose, cough, and Shortness of breath were the commonest significant symptoms in children younger than 6 months. Poor feeding, fever, runny nose, cough, irritability and shortness of breath were the commonest significant symptoms in children older than 6 months. Sever retraction, temperature >38.1 c. rhonchi, fine rales, cyanosis, RR >60 bpm and SPO2 <94were the most significant physical findings in children younger than 6 months.

Rhonchi, sever retraction, temperature >38.1 c., HR>160 BPM, RR>60 bpm and SPO2<94 were the most significant physical findings in children older than 6 months. The best predictor of admission was SpO2 value of less than 94%.then respiratory rate of greater than 60 also predict admission.

RECOMMENDATIONS

More comprehensive study should be done on larger sample sizes to evaluate the significance of the parameters of the current study to be used as guide lines for admission decision making in patients with acute bronchiolitis. Repeated pulse oximeter should be done rather than single measurement to help more in the decision making for admission. Blood gas either arterial or capillary may be studied as an admission parameter for patients with severe bronchiolitis in emergency department.

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