RESULTS

This study was conducted on 48 children aged 3-16 years, including 25 males and 23 females. Presenting with acute respiratory distress and diagnosed radiologically as pneumonia, we have aimed in this study at correlating the radiological findings with [illegible] findings focusing on the C-reactive protein [CRP] as a rapid and simple test documented to differentiate bacterial from other non bacterial infections, in comparison to other routine blood tests as erythrocyte sedimentation rate, total and differential white blood cell counts according to the radiological appearance cases were divided into those with lobar infiltration [22 cases] and those with diffuse lobular infiltration [26 cases].

THE AGE DISTRIBUTION OF CASES ACCORDING TO RADIOLOGICAL APPEARANCE

As shown in tables No 2 & 3

Children aged 3 - 7 years [group 1] are6 [22.22%] cases presenting with lobar pneumonia while21 [77.77%] cases presented with diffuse lobular pneumonia. In children aged 8-12 years [group 11] there were 12 [75%] cases presenting with lobar pneumonia while 4 [25%] cases presenting with diffuse lobular infiltration. In children aged 13 - 16 years

there were 4 [80%] cases presenting with lobar infiltration while 1 [20%] case presented with diffuse lobular infiltration [26 cases] Chi square & p was statistically significant.

The average value of CRP mg/l for group 1 was 62.66 ± 33.20mg/l & group 2 was 88.43 ± 43.88 mg/l and group 3 was 113.2 ± 43.81 mg/l. The difference was insignificant $p > 0.05$

The average value of E S.R mm/h for group 1 was 33.37 ± 8.01 mm/h & for group 2 was 44.50 ± 12.77mm/h and for group 3 was 45.00 ± 11.67mm/h. The difference was insignificant $p > 0.05$

The average value of W B Cs for group 1 was 8714.81 ± 1959.00/cumm & for group 2 was 10681.25 ± 3283.52/cumm and for group 3 was 10840 ± 2959.45/cumm. The difference was insignificant $p > 0.05$

The average value of PML for group 1 was 59.4 ± 7.25%/cumm & For group 2was 64.6 ± 9.86% /cumm and For group 3 was 71 ± 7.84% /cumm. $p > 0.05$ it's insignificant.

ACCORDING TO THE ONSETS

As shown in table No 4

In cases with gradual onset the average value of: C R P was 77.37mg/l ± 38.89 & E.S.R was 38.50mm/h ±8.40 & W B Cs

was10550/cumm ± 2514.45 and PNL was 64.20% ± 8.93.

While in cases with sudden onset the average value of: C R P was 75.66mg/l ±44.73 & E.S.R was 31.08mm/h ±14.18 & W B Cs was 8633.33/cumm ±2674.68 and PNL was 60% ±8.88. There is no significance value between the values of sudden onset and gradual onset.

ACCORDING TO RADIOLOGICAL APPEARANCE

As shown in tables No 5 & 6 & 7

In lobar infiltration the highest distribution of cases are 19 [86.30%] had CRP level above 60mg/l while only 3 [13.63%] cases had level below 60mg/l. In diffuse infiltration the highest distribution of cases 19 [73.08%] had CRP level below 60mg/l while only 7 [26.92%] cases had level above 60mg/l

chi square = 17.97 & $P < 0.05$ is significant

In lobar infiltration CRP average was 102.63mg/l ±36.93 & E.S.R was 47.27mm/h ±9.79 & leucocyte 10740/cumm ±3131.02 and PNL was 69.40% ±8.53 while in diffuse infiltration CRP was 54.42mg/l ±32.03 & E.S.R was 30.69mm/h ±6.61 leucocyte was 8619/cumm ±1943 and PNL 56.38% ±3.68

All the values of t and P are significants between lobar and diffuse infiltration.

In cases with radiological appearance of lobar infiltration is 0% of cases had E.S.R below 30mm/h while

50% of cases of diffuse lobular infiltration had the same level; 100% of lobar infiltration had E.S.R above 30 mm/h. while 50% of cases of diffuse lobular infiltration had the same level.

Chi square = 12.66 & P ≤ 0.05 is significant.

W B Cs level below 10000/cumm in 50% of cases of lobar infiltration while 69.23% of cases of diffuse lobular infiltration &level above 10.000/cumm in 50% of cases of lobar infiltration while 30.77% in cases of difuse lobular infiltration.

Chi square = 1.12 & P > 0.05 [illegible]

PNL level below 58% in 9.09% of cases of lobar infiltration while 61.54% of diffuse lobular infiltration had the same level & 90.90% of cases of lobar infiltration had PNL level above 58% while 38.46% of diffuse lobular infiltration had the same level.

Chi square = 11.82 , P < 0.05 is sigificant.

ACCORDING TO THE HISTORY OF PRECEDING UPPER RESPIRATORY TRACT INFECTION

As shown in tables No 8 & 9 & 10

CRP level below 60mg/l in 55% of cases proceded by upper respiratory tract infection while in 39.28% of cases not preceded by upper respiratory tract infection.

chi square = 3.178 & P <0.365 not significant

CRP average 64.20mg/l ±34.26 in cases with history of

preceding upper respiratory tract infection while was 85.32mg/l ±4.59 in cases not preceded by URTI it's insignificant.

E.S.R level average 37.40mm/h ±8.38 in cases with history of preceding URTI while was 38.92mm/h ±13.48 the average in cases with history not preceded by URTI it's insignificant.

The W B Cs average is 9280 per/cumm ±2267.73 in cases with history of preceding URTI while was9814 per/cumm ±3055.05 in cases with history not preceded by URTI it's insigificant

PNL level average was62.50% per/cumm ±8.83 in cases of history of preceding URTI while 62.25% per/cumm ±9.28 in cases with history not preceded by URTI it's insigificant.

SPECIFICITY & SENSITIVITY

Of CRP level in differentiating cases of lobar infiltration and persuming bacterial infection from diffuse lobular infiltration and persuming non bacterial infection most probably viral infection.

According to that an upper limit of 60 mg/l of CRP is a better border line to distinguish between bacterial and non-bacterial infections level

Patients suffering from lobar pneumonia was 22 cases [19 cases had CRP above 60mg/l (A) while 3 cases had CRP level below 60mg/l (C)]

Patient suffering from diffuse lobular infiltration was 26 cases[7 cases had CRP level above 60mg/l (B) while 19 cases had CRP level below 60mg/l (D)]

So the positive cases [CRP level above 60mg/l] are 26 cases (A + B) A as a true positive cases while B as a false positive.

The negative cases[CRP level below 60mg/l] are 22 cases (C + D) C as a false negative while D as a true negative.

$$\text{THE SEPCIFICITY OF THE TEST} = \frac{A}{A + B} = 73.07\%$$

$$\text{THE SENSITIVITY OF THE TESt} = \frac{D}{D + C} = 86.36\%$$

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Table No.1

Findings in PNEUMONIA versus CONTROL

		Cases of pneumonia	CONTROL
C.R.P	mean SD	76.52 ± 41.92	5.91 ± 4.76
E.S.R	mean SD	38.29 ± 11.65	12.16 ± 1.57
W.B.Cs	mean SD	9591.6 ± 2767	5083.3 ± 569.84
P.N.L	mean SD	62.35 ± 9.10	57.08 ± 4.78

Table No.2

DISTRIBUTION OF PNEUMONIAS IN RELATION TO AGE

Age	Radio. Appear. with lobar p.		Radio. Appear. with diffuse inf.		Total
	No.	%	No.	%	
3 - 7 years	6	22.22	21	77.77	27
8 - 12 years	12	75	4	25	16
13 - 16 years	4	80	1	20	5

Chi square 13.89 $P < 0.05$ significant

Table No.3

CRP, E.S.R., W.B.Cs& PNL ranges according to age groups

		Age 3-7 years group I	Age 8-12 years group II	Age 13-16 years group III
C.R.P.	mean SD	62.66 ± 33.20	88.43 ± 43.88	113.20 ± 43.81
E.S.R.	mean SD	33.37 ± 8.01	44.50 ± 12.77	45.00 ± 11.67
W.B.Cs	mean SD	8714.81 ± 1959	10681.25 ± 3283.52	10840 ± 2959.45
P.N.L.	mean SD	59.40 ± 7.25	64.60 ± 9.86	71.00 ± 7.84
No. of cases		27 56.25 %	16 33.33 %	5 10.41 %

All p >0.05. All t and p are insignificant.

Table No.4

CRP, E.S.R., W.B.Cs count & PML count according to the ONSET

		Cases with gradual onset	Cases with sudden onset	t & p
C.R.P mg/L.	mean	77.36	75.66	t = 0.14 p >0.05 Insign.
	SD	± 38.89	± 44.73	
E.S.R mm/h.	mean	38.50	38.08	t = 0.12 p >0.05 Insign.
	SD	± 8.40	± 14.18	
W.B.Cs /C mm	mean	10550	8633.33	t = 2.55 p <0.05 Sign.
	SD	± 2514.45	± 2674.64	
P.N.L %	mean	64.20	60	t = 1.14 p >0.05 Insign.
	SD	± 8.93	± 8.88	
No. of cases %		24 % 50	24 % 50	

Table No.5

Distribution of CRP levels according to radiological appearance

C.R.P. level	Radiological appearace with lobar infiltration		Radiological appearace with diffuse infiltration		TOTAL
	No.	%	No.	%	
0 - 20 mg/l	0	0.00%	4	15.38%	4
21 - 40 mg/l	2	9.09%	5	19.23%	7
41 - 60 mg/l	1	4.54%	10	38.46%	11
> 60 mg/l	19	86.36%	7	26.92%	26
TOTAL	22	100%	26	100%	48

Chi square = 17.97 $p < 0.05$ significant

Table No.6

E.S.R, W.B.Cs & P.N.L ranges and percentage of cases according to radiological appearance

		Cases with Radiological appearace of lobar infiltration		Cases with Radiological appearace of diffuse infiltration		
		No.	%	No.	%	
E.S.R	30 mm	0	0%	13	50%	Chi sq. 12.66
	<30 mm	22	100%	13	50%	p <0.05 significant
W.B.Cs	>10000	11	50%	18	69.23%	Chi sq. 1.12
	<10000	11	50%	8	30.77%	p >0.05 insignificant
P.N.L	> 58 %	2	9.09%	16	61.54%	Chi sq. 11.82
	< 58 %	20	90.9%	10	38.46%	p <0.05 significant

Table No.7

C.R.P, E.S.R, W.B.Cs and P.M.L ranges according to radiological appearance

		Radiological appearace with lobar infiltration	Radiological appearace with diffuse infiltration	t & p
C.R.P mg/L	mean SD	102.63 ± 36.93	54.42 ± 32.03	t 4.78 p < .05
E.S.R mm/hr	mean SD	47.27 ± 9.79	30.69 ± 6.61	t 6.74 p < .05
W.B.Cs /cmm	mean SD	10740 ± 3131.02	8619 ± 1943	t 2.76 p < .05
P.N.L %	mean SD	69.40 ± 8.53	56.38 ± 3.68	t 6.65 p < .05

ALL t & p are significant

Table No.8

Distribution of C.R.P. levels according to history of preceding upper respiratory tract infection

C.R.P. level	Cases with a history of preceding upp. resp. t. inf.		Cases with a history of NOT preceding U. R. T. I.		TOTAL
	No.	%	No.	%	
0 - 20 mg/l	3	15.0 %	1	3.57%	4
21 - 40 mg/l	4	20.0 %	3	10.71%	7
41 - 60 mg/l	4	20.0 %	7	25.0 %	11
> 60 mg/l	9	45.0 %	17	60.71%	26
TOTAL	20	100%	28	100%	48

Chi square = 3.178 p <0.365 NOT SPECIFIC

Table No.9

E.S.R, W.B.Cs & P.N.L. ranges and percentage according to history of preceding upper respiratory tract infection.

		Cases with history of preceding U. R. T. I.		Cases with history NOT preceding U. R. T. I.		
		No.	%	No.	%	
E.S.R mm/h.	>30 mm	4	20 %	9	32.15%	Chi sq. 0.36
	<30 mm	16	80 %	19	67.85%	p >0.05 INSIGNIFICANT
W.B.Cs /cmm	>10000	14	70 %	15	53.57%	Chi sq. 0.71
	<10000	6	30 %	13	46.43%	p > .05 INSIGNIFICANT
P.N.L %	> 58 %	7	35 %	11	39.28%	Chi sq. 0.09
	< 58 %	13	65 %	17	60.72%	p > .05 INSIGNIFICANT

Table No.10

CRP, E.S.R., W.B.Cs & P.M.L ranges according to history of preceding upper respiratory tract infection.

		Cases with history of preceding U. R. T. I.	Cases with history of NOT preced. U. R. T. I.	CONTKOL
C.R.P mg/L	mean SD	64.20 ± 34.26	85.32 ± 44.59	5.91 ± 4.67
E.S.R mm/h.	mean SD	37.40 ± 8.38	38.92 ± 13.48	12.16 ± 1.57
W.B.Cs /cmm.	mean SD	9280 ± 2267.73	8619 ±3055.05	5083 ± 569.84
P.N.L °/.	mean SD	62.50 ± 8.83	62.25 ± 9.28	57.08 ± 4.78

All t & p are insignificant.

Table No.11

Haematological findings in cases of pneumonia versus control

		Cases with radiol. app. of lobar infiltration	Cases with radiol. app. of Diff. infiltration	CONTROL
Hemoglobin gm/100	mean SD	13.72 ± 0.60	13.84 ± 0.59	13.79 ± 0.41
R. B. Cs count/cumm	mean SD	4,291,000 ± 216,400	4,372,000 ± 269,600	4,450,000 ± 129,100
Haematocrite %	mean SD	40.30 ± 1.40	40.31 ± 1.34	41.20 ± 1.32

E.S.R ,C.R.P.,W.B.CS AND P.N.L

AMONG DIFFERENT AGE GROUPS