RESULTS

A) Clinical results :

Patients submitted to this study were 40 babies in the neonatal period, their ages ranged from one (1) hour to (28) days.

They were 25 males and 15 females, 32 fullterm (80%) (37-42 weeks) and 8 (20%) preterm (less than 37 weeks) (10) ten patients (25%) were diagnosed as congenital pneumonia, and 30 patients (75%) as acquired pneumonia.

Of the patients with congenital pneumonia, 8 patients (80%) had a history of premature rupture of membrane where labour had occurred after 12 hours of membrane rupture, Four (4) patients (40%) with congenital pneumonia were preterm and 6 were fullterm (60%).

Twenty normal and healthy babies were selected randomly from outpatient clinics of Behna University Hospital and matched with studied group regarding age and sex table (1). The differences were statistically in significant ($P > 0.05$).

All or some of the clinical signs of neonatal respiratory distress were present in the diseased babies, table (2) shows that tachypnea is present in all cases

100%, retractions of the chest wall also in all cases 100%, while grunting were present in only in 34 cases (85%) and cyanosis in 24 cases (60%).

Clinical examination of the chest revealed bilateral pneumonia (i.e bronchopneumonia in 37 cases (92.5%) and lobar pneumonia in only 3 cases (7.5%).

X-ray chest was done to every patient, and revealed many radiological patterns (mostly of Bronchopneumonia).

B- Laboratory results :

Table (3,4,5) and Fig. (1) shows the results of gastric aspirate cultures of the diseased and control groups. In the diseased E. coli were the most common isolates from the aspirate, 10 cases (25%), then proteus species, 9 cases (22.5%), B haemolytic streptococci, 6 cases (15%), staphylococcus aureus, 4 cases (10%), and mixed bacteria 11 cases (27.5%) (Table 3).

In control group E. coli were the most common isolate also, 6 cases (30%), proteus species 3 cases (15%), B haemolytic streptococci, 3 cases (15%), staphylococcus aureus, 2 cases (10%), and mixed bacteria 6 cases (30%). (Table 4).

The differences between diseased and control groups were statistically insignificant ($P > 0.05$) (Table 5).

Table (6) shows that the incidence of bacteremia in neonates suffering from neonatal pneumonia was (62.5%) 25 cases with 50% aerobic (20 cases) and 12.5% anaerobic bacteremia (8 cases).

Table (7) shows that in the 5 cases with anaerobic blood culture which represents (20 %) of cases with positive blood culture. Bacteroids are almost always the organisms revealed.

Table (8 & 9) shows the results of blood cultures of the diseased group with isolated staphylococcus aureus in 7 cases (17.5%) E. coli in 7 cases (17.5%, B haemolytic streptococci in 4 cases (10%), bacteroid melaninogenicus in 3 cases (7.5%), Bacteroid fragilis 2 cases (5%), proteus species 2 cases (5%).

Table (10) shows that cases with anaerobic bacteremia were 5 cases (12.5%). They were 4 males and 1 females, all with congenital perinatal pneumonia (100%), 4 cases (80%) having history of premature rupture of membrane, 1 case (20%) delivered by cesearian section, and 3 cases (60%) were preterm (less than 37 weeks).

(11, 12, 13)

Table ~~(13)~~ shows that the range and mean value of different parameters of the complete blood picture in both patient and control subjects.

The mean value of haemoglobin in gm/dl were 15.46±2.67 and 14.33±1.98 for patient and control groups respectively with no significant statistical difference. (Table 12)

The mean values of red cells count in million/cmm were 4.68±0.51 and 4.89±0.40 for patient and control group respectively with no significant statistical difference.

As regards total leucocytic count (TLC) per cmm, the mean values were 22233 ±7565 and 11055 ±1975 for patient and control groups respectively. It was significantly higher in patient group ($P < 0.001$) when compared with control group.

Table (13) demonstrates also the range and mean values of the differential leucocytic count.The mean value were 6.3 ± 2.22 and 0.65 ± 0.75 for patient and control groups respectively as regards the band form of neutrophils, with significant increase in patient group ($P<0.001$).As regards the segmented form of neutrophils, the mean values were 63.6 ±10.16 and 43.75 ±5.67 for patient and control groups with significant increase in patient group also ($P<0.001$).

Table (1): Distribution of studied cases and control groups according to age and sex.

Groups / sex / Age in weeks	Studied group		Control group		Total
	Male	Female	Male	Female	
< One week	12	7	5	3	27
1 Week	6	3	2	2	13
2 Weeks	4	2	3	2	11
3-4 weeks	3	3	2	1	9
Total	25	15	12	8	60 *

* (P > 0.05).

Table (2):

Signs of neonatal respiratory distress	Number of cases	%
* Tachypnea (R.R. = 70-110/min)	40	100
* Retractions of the chest wall	40	100
* Grunting	34	85
* Cyanosis	24	60

Table (3): Gastric aspirate culture of the patient group.

Organism	Number of cases	%
* E. coli	10	25
* Proteus species	9	22.5
* B. haemolytic streptococci	6	15
* Staphylococcus aureus	4	10
* Mixed bacteria : (Mostly E. coli and staph.)	11	27.5
Total	40	100

Table (4): Gastric aspirate culture of control group.

Organism	Number of cases	%
* E. coli	6	30
* Proteus species	3	15
* B. haemolytic streptococci	3	15
* Staphylococcus aureus	2	10
* Mixed bacteria : (Mostly E. coli & staph.)	6	30
Total	20	100

Table (5): Gastric aspirate culture of patients group in relation to control group :

Group / Organisms	Diseased group		Control group		Total	
	No.	%	No.	%	No.	%
E.coli	10	25	6	30	16	26.6
Proteus Sp.	9	22.5	3	15	12	20
β.haemolytic streptococci	6	15	3	15	9	15
Staph. aureus	4	10	2	10	6	10
Mixed bacteria	11	27.5	6	30	17	28.4
Total	40	100	20	100	60	100

* ($P > 0.05$).

Table (6): Percentage of studied cases with pneumonia according to finding of blood culture.

Finding	No.	%
Positive cases	25	62.5
Negative cases	15	37.5
Total	40	100

Table (7): Percentage of cases with Bacteremia according to aerobic and anaerobic organisms.

Organisms	No.	%
Aerobic	20	80
Anaerobic	5	20
Total	25	100

Table (8): Aerobic organisms revealed in blood culture of the patient group.

Including one

Type of organism	Number of cases	%
- Staphylococcus aureus	7	17.5
- E. coli	7	17.5
- B. haemolytic streptococci	4	10
- Proteus species	2	5
Total	20	50

Table (9): Anaerobic organisms revealed in blood culture of patient group.

Type of organism	Number of cases	%
* Bacteroids melaninogenicus	3	7.5
* Bacteroid fragilis	2	5
Total	5	12.5

Table (10): Clinical findings with aerobic and anaerobic pneumonia.

Clinical findings \ Cases		Aerobic (No=20)		Anaerobic (No = S)	
		No.	%	No.	%
- Sex :	Male	12	60	4	80
	Female	8	40	1	20
- G.A. :	Preterm	3	15	3	60
	fullterm	17	85	2	40
- Mode of delivery :	-PROM	1	5	4	80
	-C.S.	1	5	1	20
	-N.V.D	18	90	0	0
- Type of pneumonia :	-Congenital	5	25	5	100
	-Acquired	15	75	0	0

* G.A. = Gestational age
* PROM = Premature rupture of membrane
* C.s. = Cesearian section
* N.V.D. = Normal vaginal delivery.

Table (11): Complete blood picture of the control group.

Case	Hb gm/dl	RBCs million/ mm^3	TLC/ mm^3	Differential L.C. %					
				Band.	Seg.	Eosin.	Baso.	Lymph.	Mono.
1	13	4.9	13,000	1	42	7	2	43	5
2	16	5.5	11,100	0	50	4	0	41	5
3	12	4.8	12,000	2	44	5	2	43	4
4	13	4.8	14,000	1	46	4	1	43	5
5	15	4	9,800	1	30	1	1	65	2
6	14	4.6	10,500	0	52	0	2	46	0
7	12.5	5.2	7,000	0	49	1	1	48	1
8	15	5.5	9,200	0	40	4	0	53	3
9	12	4.7	12,000	1	34	3	0	60	2
10	15	5	11,000	2	42	5	0	49	2
11	13	4.2	12,000	0	45	5	2	45	3
12	12	4.5	11,000	0	49	3	0	47	1
13	16	5.1	13,000	2	45	4	2	43	4
14	16	5	9,000	0	50	1	2	45	2
15	12	4.6	10,000	0	48	3	0	46	3
16	12.5	5.2	7,000	1	44	3	1	47	4
17	17	5	12,000	1	43	1	0	55	0
18	15.5	4.9	12,000	0	46	2	2	48	2
19	17.5	5.5	14,000	0	40	4	0	53	3
20	18	4.8	11,000	1	36	0	1	60	2

Table Blood picture of the patient group.

Case	Hb gm/dl	RBCs million/ mm^3	TLC/ mm^3	Differential L.C. %					
				Band.	Seg.	Eosin.	Baso.	Lymph.	Mono.
1	13	5.5	24,700	12	70	2	0	12	4
2	18	5.5	17,000	6	46	0	0	46	2
3	18.2	5.5	3,800	9	48	1	0	40	2
4	17	5	22,000	4	60	2	0	32	2
5	17	4.5	4,100	6	75	2	0	15	2
6	14	4.0	3,100	6	74	1	0	15	4
7	17.5	5	23,000	4	74	0	0	20	2
8	10.8	4.5	20,000	4	60	2	0	30	4
9	17.5	5	28,000	4	66	2	0	24	4
10	17.5	45	17,000	6	70	2	0	20	2
11	15	4.6	20,000	4	70	2	2	20	2
12	15	4.5	24,000	7	60	1	1	30	1
13	17.5	4.5	27,000	8	58	2	0	28	4
14	14	5.5	24,000	4	60	2	0	30	4
15	16	4	26,000	6	55	2	0	32	5
16	14.5	4.7	24,000	4	66	1	0	25	4
17	13	4.5	23,000	6	66	4	0	24	0
18	13.5	4	26,000	9	80	0	0	11	0
19	12	4	25,000	6	60	1	1	28	4
20	15.5	5.5	19,000	10	68	0	0	18	4
21	14.5	4.5	27,000	6	62	6	0	24	2
22	13.5	4.5	21,000	6	40	1	2	50	1
23	10.5	4.5	20,000	4	70	3	0	21	2
24	12	5	39,000	6	67	4	0	20	3
25	16	4.2	27,200	10	70	4	0	14	2
26	14.0	4.2	27,500	4	55	1	1	37	2
27	10.5	4.5	25,000	8	52	1	0	37	2
28	13	5.5	20,000	7	50	2	0	39	2
29	16	4.5	24,000	6	46	0	0	46	2
30	12	4	24,000	4	74	0	0	20	2
31	18	5.5	19,000	10	68	0	0	17	5
32	15	4.5	25,000	5	41	1	2	49	2
33	17	4.5	20,000	4	70	2	0	22	2
34	10.5	4.5	5.200	6	74	0	0	16	4
35									
36	14	4.5	17,000	5	47	0	0	46	2
37	16	4.5	25,000	6	62	5	0	25	2
38	13	4	8,000	7	60	0	1	31	1
39	17.5	5.5	17,500	5	50	2	0	40	3
40	13.5	4.5	21,000	6	40	1	2	50	1

Table (13): Statistical analysis of complete blood picture of both patient and control groups.

Case	Hb gm/dl	RBCs million/mm^3	TLC/mm^3	Differential L.C. %					
				Band.	Seg.	Eosin.	Baso.	Lymph.	Mono.
Control group (20 cases Mean SD	14.33 ±1.98	4.89 ±0.40	11055 ±1975	0.65 ±0.75	43.75 ± 5.0	3 ±1.89	0.95 + 0.89	49 ± 6.63	2.65 ±1.53
Diseased group (40 cases Mean SD	14.76 ± 2.37	4.67 ±0.51	22233 ±7565	6.3 ±2.22	63.6 ±10.6	1.77 ±1.38	0.27 ±0.58	25.6 ±10.34	2.47 ±1.36
t	0.695	1.704	7.704*	12.881*	8.835*	2.444	3.016	0.749*	0.426
P	> 0.05	>0.05	< 0.001	> 0.001	< 0.001	> 0.05	> 0.05	< 0.007	>0.05

* means significant.

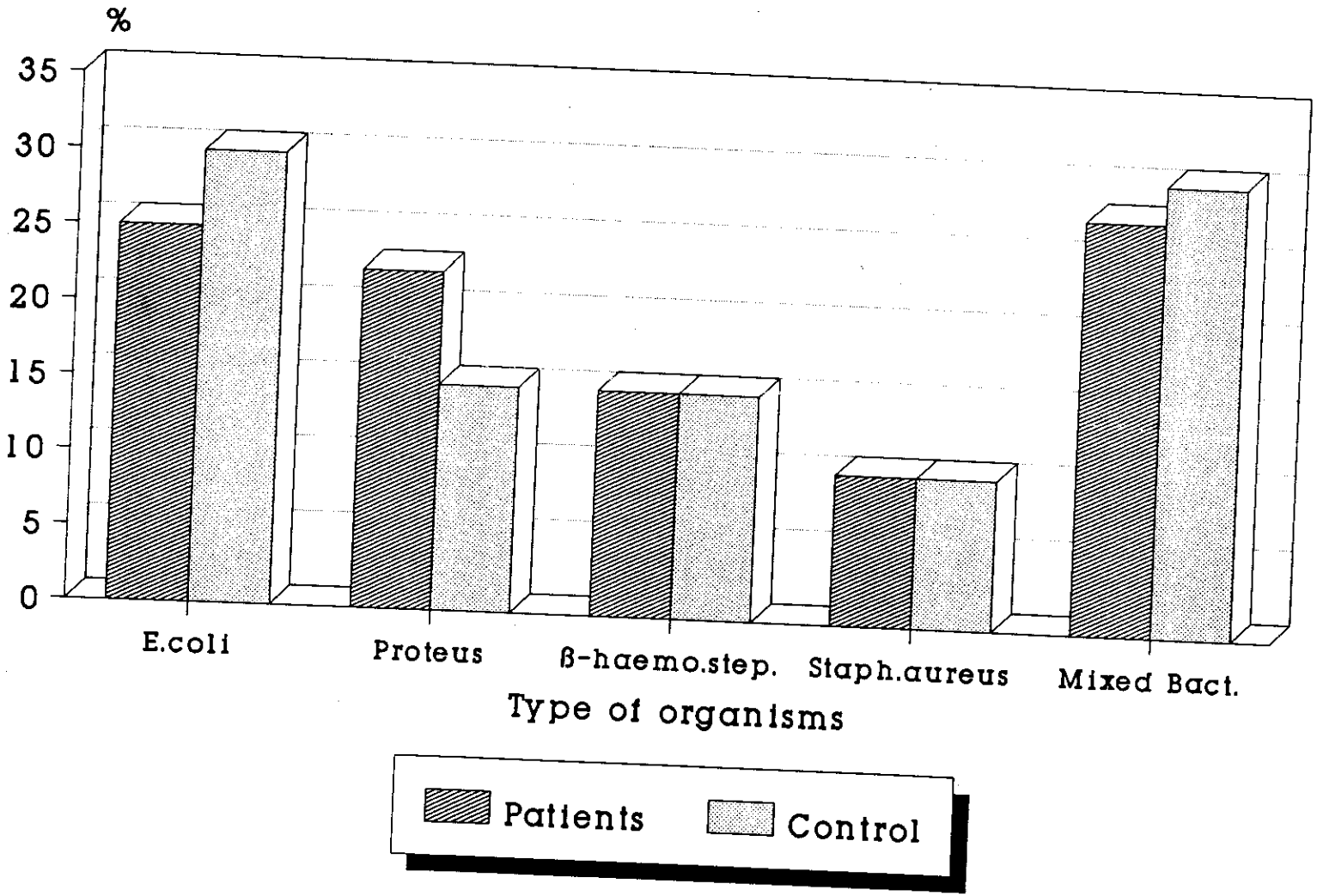

Fig.(1): % of Gastric aspirate finding in patients and control groups.

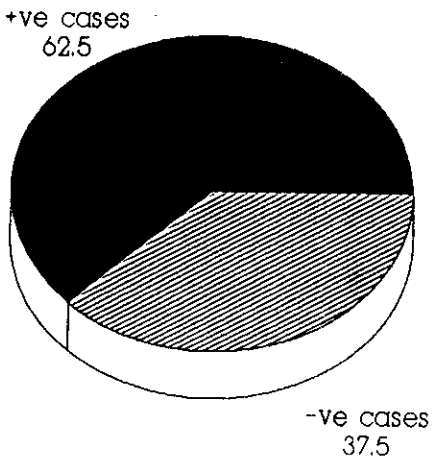

Fig. (2)Percentage of studied cases with pneumonia according to finding of blood culture.

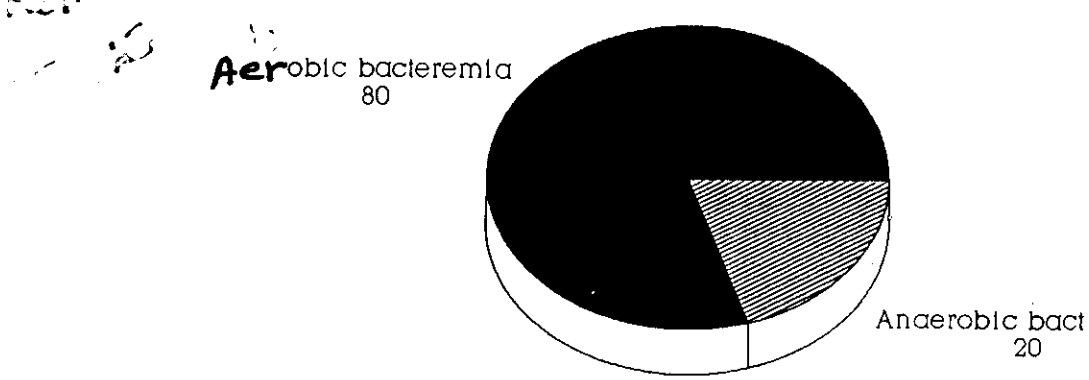

Fig.:(3) Percentage of cases with bacteremia according aerobic and anaerobic organisms.