Results

300 cases were studied aged months to 60 years old, 250 cases were suffering from diarrhoea and 50 cases — apparently healthy non diarrhoeal controls.

Control Cases:

The destribution of sex & age groups of 50 control cases are shown in table (1). From the table 62% were males, 13 cases out of 50 were between age 0 · 2 years, 12 between (2 · 5 years), 10 between 5-15 years, and 10 between (15-45 years), while 5 cases between (45 · 60 years).

The control cases were taken randomly, their stool were negative for Aeromonas hydrophila cultured on ampicillin sheep blood agar. for 48 hours incubation.

Diarrhoeal Cases:

From January 1986 to June 1988 250 diarrheal cases were collected and studied. Their age and sex distribution are shown in table (2) in which 141 out of 250 cases (56.4%) were among age group (0 · 2y) with (31.2%) males & (25.2%) females, at age group (2 · 5 y) 42 out of 250 cases (16.8%), with (8%) males, (8.8%) females, 16 out of 250 cases (6.4%) in age group (5

Table (1) Distribution of sex & age among control cases:

Total number of cases	Sex distribution		Age distribution in years				
	males	females	0 - 2	2 - 5	5 - 15	15 - 45	45 - 60
50	31 (62%)	19 (38%)	13 (26%)	12 (24%)	10 (20%)	10 (20%)	5 (10%)

Table (2) Age & sex distribution among 250 diarrhoeal cases.

Sex / Total no 250	Age groups in years				
	0 - 2	2 - 5	5 - 15	15 - 45	45 - 60
	141 (56.4%)	42 (16.8%)	16 (6.4%)	46 (18.4%)	5 (2%)
Male	78 (31.2%)	20 (8%)	6 (2.4%)	20 (8%)	1 (0.4%)
Female	63 (25.2%)	22 (8.8%)	10 (4%)	26 (10.4%)	4 (1.6%)

· 15y) with (2.4%) males (4%) females, 46 out of 250 caes (18.4%) in age group (15 · 45y) with (8%) males & (10.4%) females, while 5 out of 250 cases (2%) in age group (45 · 60y) with (0.4%) males & (1.6%) females. It is notcied from the table that age group (0 · 2y) show the highest incidence of cases 141 out of 250 cases. (56.4%)

Stool Examination:

Stools were examined for mucus, pus, the result are shown in table (3). The table shows that from 141 cases in age group (0 · 2 y) 90 had mucus, 34 showed pus while 17 cases no mucus or pus was demonstrated. From 42 cases in age group (2 · 5 y) 33 had mucus and 9 showed pus in stools. In age group (5 · 15y) 13 out 16 cases had mucus and 3 had pus. Out of 46 cases within age group (15 · 45 y) 35 had mucus and 11 had pus. 4 out 5 cases in age group of (45 · 60y) had mucus and 1 had pus. From the table it is noted that patients in all age groups had mucus & pus except in age group (0 · 2) in which 17 out of 141 cases had no mucus or pus. Moreover (70°₀) of stool specimens had mucus & (23.2°₀) had pus while (6.8°₀) showed none of mucus or pus.

Table (3) Result of Macroscopic & Microscopic examination of stools.

Age groups in years / Number of cases.	Character of stool		
	Mucus	Pus	None
0 - 2 141	90 (63.8%)	34 (24.1%)	17 (12.0%)
2 - 5 42	33 (78.5%)	9 (21.4%)	
5 - 15 16	13 (81.2%)	3 (18.15%)	
15 - 45 46	35 (76%)	11 (23.9%)	
45 - 60 5	4 (80%)	1 (20%)	
Total number 250	175 (70%)	58 (23.2%)	17 (6.8%)

Incidence of organisms isolated and parasites detected from 250 diarrhoeal cases

Api20E system was used for the identification of non lactose fermenters, while standard becteriological methods were used for identification of lactose fermenters. The results of isolation and detection of bacteria and parasites are shown in table (4), which demonstrated an incidence of isolateion of E.coli (48%), of klebsiella spp (8%), (4%) for Proteus mirabilis, non pigmented pseudomonas, and Citrobacter spp, (3.2%) for Aeromonas hydrophila, Proteus valgaris, Candida albicans and Anthracoid spp, (2.8%) for Giardia lamblia, Ent.histolytica, and Morganella morgani, (2%) for Proteus rettgeri, Pseudomonas aeruginosa and Achromobacter spp, (1.6%) for Shigella boydi, (1.2%) for Pastruella multocida and Enterobacter spp, (0.4%) for Shigella flexneri and Staph aureus. From the table it was noted that the total incidence of oxidase positive organisms which included non pigmented pseudomonas, Aeromonas hydrophila, Anthracoid spp, Pseudomonas aeruginosa, Achromobacter spp, and Pasteurella multocida was (15.6%).

Table (4) Incidence of organisms & parasites isolated and detected from 250 diarrhoeal cases

Organisms and parasites	number	percent
Escherichia coli	120	48%
Klebsiella spp.	20	8%
Proteus mirabilis	10	4%
Non pigmented pseudomonas.	10 ooooooo	4%
Citrobacter spp.	10	4%
Aeromonas hydrophila.	8 oo*	3.2%
Proteus vulgaris	8	3.2%
Candida albican.	8 ooooo#	3.2%
Anthracoid spp.	8 oooooo	3.2%
Giardia lamblia.	7	2.8%
Entermoeba histolytica.	7	2.8%
Morganella morganii.	7	2.8%
Proteus refegrii.	5	2%
Pseudomonas aeruginosa	5	2%
Achromobacter spp.	5 ooo*@	2%
Shigella boydii	4 ooo	1.6%
Pastrulla multocida.	3	1.2%
Enterobacter spp.	3 o	1.2%
Shigella flexneri	1	0.4%
Staph aureus.	1	0.4%
o With E.coli * With proteus vulgaris # With anthracoid @ With citrobacter		

Incidence of oganisms & parasites from 250 diarrhoeal cases among differnt age groups

The number of organisms and parasites among different age groups is shown in table (5) from the table it is noticed that Escherichia coli has a total number of isolation 120, (64.16%) of them isolated in age group (0 · 2y), (15%) in (2 · 5y), (5.8%) in (5 · 15y), (13.3%) in (15 · 45y) and (1.6%) in (45 · 60y). The total number of isolation for klebsiella spp was 20, (85%) of them in age group (0 · 2y), (10%) in (2 · 5y), (5%) in (15 · 45y) and negative results in age group (5 · 15y) and (45 · 60y). 10 isolates for Proteus mirabilis were obtained, (40%) of them in age group (0 · 2y), (30%) in (2 · 5y) (10%) in (5 · 15y), (20%) in ((15 · 45y) and no isolation from age group (45 · 60y).

The total number for non pigmented pseudomonas was 10, (50%) in age group (0 · 2y), (20%) in each of age groups (2 · 5y) and (15 · 45y), (10%) in (45 · 60y) and no isolation in age group (5 · 15y). 10 Isolates were obtained for Citrobacter, (40%) in age group (0 · 2y), (20%), (20%) in (2 · 5y) and (10% in (5 · 15y). No isolation in age group (45 · 60y). The total number for Aeromonas hydrophila, was 8 (87.5%) in age group (0 · 2y), and (12.5%) in a (2 · 5y) and no isolation in age groups (5 · 15y), (15 · 45y) and (45 · 60y). Proteus vulgaris was isolated in 8 cases, (50%) in age group

45y), (25%) in each of age groups (0 · 2y) and (2 · 5y) and no isolation in age group (5 · 15y) & and (45 · 60y). The total number for Candida albicans was (50%) in age group (15 · 45y), (37.5%) in (0 · 2y), and (13.5%) in (45 · 60y) and negative isolation in age groups (2 · 5y) and (5 · 15y). Anthracoids were isolated in 8 cases, (50%) of them in age group (0 · 2y), (25%) for both age groups (5 · 15y) and (15 · 45y), no isolates in age groups (2 · 5y) and (45 · 60y). The tatol number of detection for Giardia lambia was 7, (42.8%) of them in age group (15 · 45y), (26.5%) in (2 · 5y), (25%) in (5 · 15y), while it was not isolated in age groups (0 · 2y) and (45 · 60y). For Ent.histolytica 7 cases could be detected, (42.8%) of them in age group (2 · 5y), (25%) in (5 · 15y), (14.2%) in (15 · 45y) and (4.2%) in (45 · 60y) it was not detected at age group (0 · 2y). The tatol number of isolation for Morganella morganic was 7, (57.1%) in age group (0 · 2y), (28.5%) in (2 · 5y), (14.2%) in (15 · 45y) and no isolation in age groups (5 · 15y) and (45 · 60y). 5 isolates for Proteus rettgeri were obtained, (60%) in age group (15 · 45y), (40%) in (2 · 5y), while negative results in age groups (0 · 2y), (5 · 15y) and (45 · 60y) . Pseudomonas aeruginosa was isolated in 5 cases, (80%) of them in age group (15 · 45y) and (20%) in (5 · 15y), while no isolation in age groups (0 · 2y), (2 · 5y), and (45 · 60y). Achromobacter isolated only in 5 cases in age group (0 · 2y), the total number of Shigella boydi isolates

Table (5) Incidence of isolation and detection of bacteria and parasites from 250 diarrheal cases among different age groups.

Bacteria & Parasites / Age Groups No.	E. coli	Klebsiella spp	Proteus Mirabilis	Non pigmented pseudomonas	Citrobacter	Aeromonas hydrophila	Proteus vulgaris	Candida albican	Anthracoids	Giardia lamblia	Ent. histolytica	Morganella morgani	Proteus rettegrii	Pseudomonas aeruginosa	Achromobacter spp	Shigella boydii	Pastruella multocida	Enterobacter spp	Shigella flexneri	Staph. aureus
Total no	120	20	10	10	10	8	8	8	8	7	7	7	5	5	5	4	3	3	1	1
0 - 2	77 64 - 16%	17 85%	4 40%	5 50%	4 40%	7 87.5%	2 25%	3 37.5 %	4 50%			4 57.1%			5 100%	4 100 %	2 66.6	2 66.6		1 100%
2 - 5	18 15%	2 10%	3 30%	2 20%	2 20%	1 12.5%	2 25%			2 28.5 %	3 42.8 %	2 28.5%	2 40%				1 33.3	1 33.3	1 100	
5 - 15	7 5.8		1 10%		1 10%				3 25%	3 25%	2 25%			1 20%						
15 - 45	16 13.3 %	1 5%	2 20%	2 20%	3 30%		4 50%	4 50%	2 25%	3 42.8 %	1 14.2 %	1 14.2%	3 60%	4 80%						
45 - 60	2 1.6%			1 10%				1 12.5 %			1 4.2%									

was 4 were isolated only in age group (0 · 2y), 3 isolates for Pastruella multocida, were obtained, (66.6%) of them in age group (0 · 2y), (33.3%) in age group (2 · 5y) and negative results in age groups (5 · 15y), (15 · 45y) and (45 · 60y), 3 isolates for Enterobacter spp were obtained only in age group (0 · 2y), (66.6%) and (2 · 5y) 33.3%. Only one isolate of Shigella flexneri in age group (2 · 5y) and also one isolate of staph aureus in age group (0 · 2y).

Clinical data which is related to the isolated organisms from 250 diarrhoeal cases among different age groups

(A) Group (0 · 2) years .

The clinical data which is related to organisms isolated in diarrhoeal cases of age group (0 · 2y) are shown in table [6] as regards sex, fever, type of diarrhoea, duration of illness, and charcter of stool. From the table it is shown that:

· For E.coli,

(54.5%) of cases are males, (51.9%) without fever, (55.8%) with diarrhoea and vomiting, (64.9%) with mucus, (22%) with pus in stool examination.

· For Kelbsiella spp

(64.7%) of cases are males, (76.4%) of them had fever, (58.8%) with diarrhoea and vomiting, (76.4%) with duration less tham 3 days, (70.5%) with mucus, 17.6% with pus in their stools.

Aeromonas hydrophila

(57.1%) of cases are males, (71.4%) with fever, (57%) with diarrhoea and vomiting, (71.4%) with duration more than 3 days, (42.8%) with mucus & (57%) with pus in their stools.

Achromobacter spp:

(60%) of cases are females (100%) without fever, (60%) with diarrhoea and vomiting, (60%) with duration less than 3 days, (80%) with mucus, (20%) without mucus & pus in their stools.

Proteus mirabilis:

(50%) for both sex, (75%) with fever, (75%) with diarrhea and vomiting (100%) with duration less than 3 days, (75%) with pus in their stools.

Citrobacter spp

(75%) of cases are females, (75%) without fever, (75%) with diarrhoea, (50%) for duration less and more 3 days, (50%) for presence of mucus & and nolhing in their stools

Morganella morgani:

(50%) for both sexes, (100%) without fever, with diarrhoea, duration less than 5 days and mucus in their stools.

Non pigmented pseudomonas:

(60%) of cases are males, without fever, with diarrhea, and duration less than 3 days, (40%) for mucus and (20%) for pus in their stools.

Anthracoid spp

(75%) of cases are males, 100% without fever, (75%) with diarrhoea and vomiting (100%) with duration less than 3 days (100%) with mucus in their stools.

Shigella boydii:

(75%) of cases are males, 100% with fever, (100%) with diarrhoea and vomiting, and duration less than 3 days and the stool of all cases with pus.

Candida albican

(66.6%) of cases are females, with diarrhoea associated with upper respiratory tract infection, (100%) for duration more than 3 days, and presence of mucus in their stools.

Proteus vulgaris

2 male cases, without fever, with diarrhoea and vomiting, with duration less than 3 days and mucus in their stools.

Pastruella multocida

2 male cases one with fever, with diarrhea & vomiting, the 2 cases with duration more than 3 days and mucus in their stools.

Enterobacter spp:

2 male cases with fever, with diarrhoea & vomiting, duration less than 3 days and pus in their stools.

Staph aureus:

One male case, without fever, with diarrhoea & vomiting, duration less than 3 days and mucus in his stool.

Table (6) Clinical data which is related to the isolated organisms from diarrheal cases among age group (0 - 2) years.
o Organism with E.coli.
@ Organisms with citrobaeter.
D^ Diarrhoea with upper respiratory tract infection

Organism / No.	Clinical data											
	Sex		Fever		Diarrhoea			duration		character of stool		
	male	femal	None	>37.5	diarrhea	diarr. + vom	D^	1 - 3	> 3	mucus	pus	none
E. coli 77	42 (54.5%)	35 (45.45%)	40 (51.9%)	37 48.05 %)	27 (35%)	43 (55.8%	7 (9.09%	38 49.3%	29 37.6%	50 64.9%	17 22%	10 12.9%
Klebsiella spp. 17	11 64.7%	6 35.29%	4 23.5%	13 76.4%	4 23.5%	10 58.8%	3 17.6%	13 76.4%	4 23.5%	12 70.5%	3 17.6%	2 11.6%
Aeromonas hydrophila 7 oo	4 oo 57.1%	3 42.8%	2 o 26.5%	5 o 71.4%	3 24.8%	4 oo 57.1%		2 28.5%	5 oo 71.4%	3 o 42.8%	4 o 57%	
Achromobacter spp. 5 ooo@	2 o@ 40%	3 oo 60%	5 100%		2 o 40%	3oo@ 60%		3 oo 60%	2 o@ 40%	4 oo@ 80%		1 o

Organisms / No.	Clinical data												
	Sex		Fever		Diarrhea			duration		Cheracter of stool		
	male	Famele	None	› 37.5	Diarrha	D + V	D + U.R.T	1 - 3	› 3	mucus	pus	none
Proteus mirabilis 4	2 50%	2 50%	1 25%	3 75%	1 35%	3 75		4 100%		25%	3 75%	
Citrobacter spp 4	1 25%	3 75%	3 75%	1 25%	3 75%		1 25%	2 50%	2 50%	2 50%		2 50%
Morgonella morgani 4	2 50%	2 50%	4 100%		4 100%			4 100%		4 100%		
non. pig. Pseudomonas 5	3 60%	2 40%	3 60%	2 40%	3 60%		2 40%	3 60%	2 40%	2 40%	1 20%	2 40%
Anthracoid spp 4 oooo	3 75%	1 25%	4 100%		1 25%	3 75%		4 100%		4 100%		
Shigella boydi 4 ooo	3 75%	1 25%		4 100%		4 100%		4 100%			4 100%	
Candida albican 3	1 33.3%	2 66.6%	2 66.6%	1 33.3%	1 33.3%		2 66.6%		3 100%	3 100%		
Proteus vulgaris 2	2 100%		1 50%	1 50%	1 50%	1 50%		2 100%		2 100%		
Pastruella multocida 2	2 100%		1 50%	1 50%	1 50%	1 50%		2 100%		2 100%		
Enterobacter spp 2	2 100%			2 100%		2 100%		2 100%			2 100%	
Staph. aureus 1	1 100%		1 100%			1 100%		1 100%		1 100%		

(B) Group (2 · 5) years .

The clinical data are shown in table (7) which it is shown that:

Escherichia coli:

(55.5%) of cases are males, (33.3%) with fever (55.5%) with dearrhoea & vomiting, (83.3%) with duration less than 3 days, (83.3%) with mucus in their stools.

Proteus mirabilis:

3 male cases, with onset of diarrhoea less than 3 days, (33.3%) with fever,(66.6%) with diarrhoea, and mucus in their stools.

Ent.histolytica:

(66.6%) of cases are males, (100%) without fever, with diarrhoea, of onset more than 3 days and mucus in their stools.

Citrobacter spp:

2 male cases, without fever, with diarrhoea, of onset more than 3 days and mucus in their stools.

Klebsiella spp:

2 male cases, one of them with fever, diarrhoea and vomiting, the 2 cases with onset of duration less than 3 days and pus in their stools.

Proteus vulgaris:

2 male cases, without fever, with diarrhoea of onset less than 3 days and mucus in their stools.

Giardia lamblia:

2 male cases, without fever with diarrhoea of onset more than 3 days and mucus in their stools.

Morganella morgani:

2 cases one of them is male, with fever, diarrhoea and vomiting and duration more than 3 days, with pus in stool.

Proteus rettegrii:

2 male cases, without fever, with diarrhoea, of onset less than 3 days and mucus in their stools.

Non pigmented pseudomonas:

2 male cases without fever, with diarrhoea of onset more than 3 days and mucus in their stools.

Aeromonas hydrophila:

one male case, with fever, diarrhoea & vomiting of duration less than 3 days and pus in the stool.

Pastruella multocida: one male case, with fever, diarrhoea associated with upper respiratory tract infection of duration less than 3 days, and mucus in the stool.

Shigella flexneri

One male case, with fever, diarrhoea & vomiting of onset less than 3 days and pus in his stool.

Enterobacter spp:

one female case, without fever, diarrhoea of duration more than 3 days, and mucus in the stool.

Table (7) Clinical data which is related to the isolated organisms from diarrheal cases among age group (2 - 5) years.
o Organisms with E.coli
* Organisms with proteus vulgaris.

organisms / No.	Sex		Fever		Diarrhea			duration		Character of stool		
	male	female	non	< 37.5	dearrhoea	dearrhea + vomiting	diarrhea with u. resp. Tr. infection	1 - 3	< 3	mucus	pus	None
E. coli 18	10 55.5%	8 44.4%	12 66.6%	6 33.3%	5 27.7%	10 55.5%	3 16.6%	15 83.3%	3 16.6%	15 83.3%	3 16.6%	
Proteus mirabilis 3	3 100%		2 66.6	4 33.3%	2 66.6%	1 33.3%		3 100%		2 66.6%	1 33.3%	
Ent. histolytica 3	2 66.6%	1 33.3%	3 100%		3 100%				3 100%	3 100%		
Citrobacter spp 2	2 100%		2 100%		2 100%				2 100%	2 100%		
Klebsiella spp 2	2 100%		1 50%	1 50%	1 50%	1 50%		2 100%			2 100%	
Proteus vulgaris 2	2 100%		2 100%		2 100%			2 100%		2 100%		
Giardia Lambia	2 100%		2 100%		2 100%				2 100%.1	2 100%		

organisms / No.	Sex		Fever		Diarrhoea			duration		Charachter of stool		
	male	female	non	< 37.o	diar-rhea	D + V	D+U.R.T	1 - 3	< 3	mucus	pus	none
Morg. 2 morgani	1 50%	1 50%	1 50%	1 50%	1 50%	1 50%		1 50%	1 50%	1 50%	1 50%	
Proteus rettegrii 2	2 100%		2 100%		2 100%			2 100%		2 100		
non pigm ps. 2 o	2 100%		2 100%		2 100%				2 100%	2 100%		
Aeromonas 1 *	1 100%			1 100%		1 100%		1 100%			1 100%	
Pastruella multocida 1	1 100%			1 100			1 100%	1 100%		1 100%		
Shigella flexneri 1	1 100%			1 100		1 100%		1 100%			1 100%	
Entero bacter 1		1 100%	1 100%		1 100%				1 !100%	1 100%		

(C) Age group (5 - 15) years:

The clinical data are shown in table (8), from which it is shown that:

Escherichia coli:

(57.1%) of cases are males, & (57.1%) with fever, (71.4%) with diarrhoea, while (28.5%) associated with upper respiratory tract infection, (87.1%) with mucus in the stools.

Anthracoid spp:

2 cases, one of them is male with fever, diarrhoea, vomiting the two cases with duration less than 3 days and mucus in the stool.

Giardia lamblia:

2 female cases, without fever, with diarrhoea of onset more than 3 days and mucus in the stool.

Ent.histolytica:

2 cases, one of them is male, with fever, the 2 cases with diarrhoea of onset more than 3 days and mucus in the stool.

Table (8) Clinical data which is related to the isolated organisms from diarrhoeal cases among age group (5 - 15) years.
o Organism with E.coli

D = diarrhoea
D+UR : with upper resp. tract

Organism / Number	Sex		Fever		Diarrhoea			duration		character of stool		
	male	female	non	< 37	diarrhea	D + V	D + U.R.T	1 -3	< 3	mucus	pus	none
Escherichia coli 7	4 57.1%	3 42.8%	3 42.8%	4 57.1%	5 71.4%		2 28.5%	5 71.4%	2 28.5%	6 85.7%	1 14.2%	
Anthracoid spp 2 oo	1 50%	1 50%	1 50%2	1 50%	1 50%	1 50%		2 10%		2 100%		
Giardia lamblia 2		2 100%	2 100%		2 100%				2 100%	2 100%		
Ent. histolytica 2	1 50%	1 50%	1 50%	1 50%	2 100%				2 100%	2 100%		
Citrobacter spp 1	1 100%		1 100%		1 100%			1 100%		1 100%		
Proteus Mirabilis 1		1 100%		1 100%	1 100%			1 100%			1 100%	
Pseudomonas aeruginosa 1	1 100%			1 100%		1 100%		1 100%			1 100%	

Citrobacter spp:

One male case, without fever, with diarrhoea of onset less than 3 days and mucus in the stool.

Proteus mirabilis:

One female case with fever, diarrhoea, of onset less than 3 days and pus in the stool.

Pseudomonas aeruginosa:

One male case with fever, diarrhoea & vomiting of duration less than 3 days and pus in the stool.

(D) Age group (15 · 45) years .

The clinical data are shown in table (9) from which it is shown that:

Escherichia coli:

(62.5%) of cases are females, (18.15%) with fever, (68.7%) with diarrhoea, (100%) with duration less than 3 days, (87.5%) with mucus in the stool.

Candida albican:

(75%) of cases are females, all cases, without fever, with diarrhoea more than 3 days and mucus in the stool.

Proteus vulgaris:

(75%) of cases are males, (50%) with fever, (75%) with diarrhoea & vomiting, (100%) with duration less than 3 days, (75%) with pus in the stool.

Giardia lamblia:

(66.6%) of cases are females all cases without fever, with diarrhoea of duration more than 3 days and mucus in the stool.

Citrobacter spp:

(66.6%) of cases are females, all cases without fever, with diarrhoea of onset less than 3 days and mucus in the stool.

Pseudomonas auriginosa:

(50%) of cases are males, (75%) with fever, (50%) with diarrhoea and vomiting, (100%) with duration less than 3 days, (75%) with pus in the stool.

Proteus rettegrii

(66.6%) of cases are females, (100%) without fever and diarrhoea with onset less than 3 days, (66.6%) with mucus in the stool.

Proteus mirabilis:

2 female cases, one of them with fever, and diarrhoea & vomiting, the 2 cases with duration less than 3 days, one of them with pus in the stool.

Non pigmented pseudomonas:

2 cases, one of them is male, with diarrhoea & vomiting and pus in the stool.

Anthracoid spp:

male and female cases, without fever, with diarrhoea, of onset less than 3 days and mucus in the stool.

Klebsiella spp:

One female case, without fever, with diarrhoea of onset less than 3 days and mucus in the stool.

Table 9 Clinical data which is related to the isolated organisms from diarrhoeal cases among age group (15 - 45) years. U.R.T : upper Res. tract infection

o Organisms with E.coli

* Organisms with anthracoid.

Organisms / No.	Sex		Fever		diarrhoea			duration		character of stool		
	male	female	none	< 37.5	diarrhea	diarrhoea + vomting	Diarrhoea with U.R.T	1 - 3	< 3	mucus	pus	none
Escherichia coli 16	6 37.5%	10 62.5%	13 81.25%	3 18.75%	11 68.7%	5 31.2%		16 100%		14 87.5%	2 12.5%	
Candida albican 4	1 25%	3 75%	4 100%		4 100%				4 100%	4 100%		
Proteus vulgaris 4	3 75%	1 25%	2 50%	2 50%	1 25%	3 75%		4 100%		25%	3 75%	
Giardia lamblia 3	1 33.3%	2 66.6%	3 100%		3 100%				3 100%	3 100%		
Citrobacter spp 3	1 33.3%	2 66.6%	3 100%		3 100%			3 100%		3 100%		
Pseudomonas aeruginosa 4	2 50%	2 50%	1 25%	3 75%	2 50%	2 50%		4 100%		1 35%	3 75%	

Organisms / Number	Sex		Fever		diarrhea			duration		character of stool		
	male	female	none	< 37.5	diarrhea	diarrha + vomiting	Diarrhea with U.R.T	1 - 3	< 3	mucus	pus	none
Proteus retegrii 3	1 33.3%	2 66.6%	3 100%		3 100%			3 100%		2 66.6%	1 33.3%	
Proteus mirabilis 2		2 100%	1 50%	1 50%	1 50%	1 50%		2 100%		1 50%	1 50%	
Non pigmented Pseudomonas 2	1 50%	1 50%	2 100%		1 50%	1 50%		2 100%		1 50%	1 50%	
Anthracoid spp 2	1 50%	1 50%	2 100%		2 100%			2 100%		2 100%		
Klebsiella spp 1		1 100%	1		1 100%			1 100%		1 100%		
Ent. histolytica 1	1 100%		1 100%		1 100%				1 100%	1 100%		
Morganella morgani 1	1 100%		1 100%		1 100%			1 100%		1 100%		

Table (10) Clinical data which is related to the isolated organisms from diarrhoeal cases among age group (45 - 60) years .

D = diarrhoea
D+V = diarrhoea + vomiting
D+U.RT = diarrhoea + upper resp. tract infection

Organism / Number	Sex		Fever		Diarrhoea			duration		Character of stool		
	male	female	none	< 37.5	D	D + V	D + U.R.T	1 - 3	< 1 - 3	mucus	pus	none
Escherichia coli 2		2 100%	1 50%	1 50%	1 50%	1 50%		2 100%		1 50%	1 50%	
Non pigmented pseudomonas 1	1 100%		1 100%		1 100%			1 100%		1 100%		
Candida albican 1		1 100%	1 100%		1 100%				1 100%	1 100%		
Ent. histolytica 1		1 100%	1 100%		1 100%				1 100%	1 100%		

Ent.histolytica:

One male case, without fever, with diarrhoea, of onset more than 3 days and mucus in the stool.

Morganella morgani:

One male case, without fever, with diarrhoea of onset less than 3 days and mucus in the stool.

(E) Age group (45 - 60) years:

The clinical data are shown in table (10) for:

Escherichia coli:

2 female cases one of them with fever, diarrhoea & vomiting, mucus in the stool, onset of diarrhoea of less than 3 days for the 2 cases.

Non pigmented pseudomonas:

One male case without fever, diarrhoea, of onset less than 3 days and mucus in the stool.

Candida albican:

One female case without fever, with diarrhoea of onset more than 3 days, and mucus in the stool.

Ent.histolytica:

One female case without fever, with diarrhoae of onset more than 3 days and mucus in the stool.

Incidence of Toxigenic E.coli detected on adrenal Y1 mouse cells.

The incidence of Toxigenic strains of E.coli detected on adrenal Y1 mouse cells and their incidence among different age groups are shown in table (11), (12), respectively from which it was found that (23.3%) of total strins are toxigenic and the high incidence (71.4%) are found in age group (0 - 2).

Clinical data which is related to Toxigenic E.coli in diarrhoeal cases among different age groups:

The clinical data are shown in table (13), from which it is shown that:

Table (11) Incidence of toxigenic E.coli using Adrenal Y1 mouse cells .

Total no of E.coli strains .	No of Toxigenic strains .	No of non Toxigenic strain
120	28 (23.3%)	92 (76.66%).

Table (12) Incidence of 28 Toxigenic E.coli among different age groups

Total No. of E.coli	Age groups in years				
	0 - 2	2 - 5	5 - 15	15 - 45	45 - 60
28	20 (71.4%)	6(21.42%)		2 (7.1%)	

Table (13) Clinical data related to 28 Toxigenic E.coli strains among different age groups

Age / No.	Sex		Fever		Diarrhea			duration		Character of stool		
	male	female	none	< 37.5	D	D +V	D + U.R.T	1 - 3	< 1 - 3	mucus	pus	none
0 - 2 20	12 60%	8 40%	16 80%	4 20%	8 40%	10 50%	2 100%	18 90%	2 10%	17 85%	3 15%	
2 - 5 6	4 66.6%	2 33.3%	6 100%		5 83.3%	1 16.6%		6 100%		6 100%		
15 - 45 2		2 100%	2 100%		2 100%			2 100%		2 100%		

D = diarrhoea
D + V = diarrhoea + vomiting
D + U.R.T = diarrhoea + upper respiratory tract infection

(0 · 2) group:

(60%) of cases are males, 20% with fever (80%) without fever, (50%), with diarrhoea & vomiting, with duration less them 3 days, (85%) with mucus in the stool.

(2 · 5) group:

(66.6%) of cases are males, (100%) without fever, (83.3%) with diarrhoea, (100%) with duration less than 3 days and mucus in the stool.

(15 · 45) group:

2 female cases without fever, with diarrhoea less than 3 days, and mucus in the stool.

Bio·chemical reactions on Api20E system for Aeromonas hydrophila

Table (14) shows bio·chemical activities of 8 strains of Aeromonas hydrophila isolated from 250 diarrhoeal cases. The table shows that the number of bio·chemical tests was 21 with oxidase reaction, and each strain had profile number for reading from computer index provided with the system. from the table it was shown that .

- all strains are ONPG positive.

Table (14) Bio-chemical Reaction on Api20E System For Aeromonas Hydrophila

Strain No.	OPNG	ADH	LDH	ODH	CIT	H2S	URE	TDA	IND	VP	GEL	GLU	MAN	INO	SOR	RHA	SAC	MEL	AMY	ARA	OX	profile no.
101	+	+	+	-	-	-	-	-	+	+	+	+	+	-	-	-	+	-	+	-	+	7047125
203	+	+	+	-	+	-	-	-	-	+	+	+	+	-	-	-	+	-	+	+	+	7207127
196	+	-	-	-	+	-	-	-	+	+	+	+	+	-	-	-	+	-	-	+	+	7247126
112	+	+	+	-	+	-	-	-	+	-	+	+	+	-	-	-	+	-	+	+	+	7246127
123	+	+	+	-	-	-	-	-	-	+	+	+	+	-	-	-	+	-	-	+	4 +	7007106
124	+	+	+	-	-	-	-	-	+	+	+	+	+	-	-	-	+	-	+	+	+	7047127
222	+	+	+	-	+	-	-	-	+	+	+	+	+	-	-	-	+	+	+	+	+	7247176
230	+	+	+	-	+	-	-	-	+	+	+	+	+	-	-	+	+	-	+	+	+	7247137

- all strains are Oxidase positive.

There are different positivity & negativity among the other biochemical tests.

Incidence of isolation of Aeromonas hydrophila among different months from January 1987 to June 1988.

Fig (1) shows that Aeromonas hydrophila were isolated in Augest and Septerber (1987), 3 cases for each month, and 2 cases were isolated in July (1987); i.e. their isolation was in summer months.

Results of associated organisms with 8 strains of Aeromonas hydrophia

Rota virus was detected by latex agglutination method, bacteria was identified by standared bacteriological methods and Api20E systems. The results are shown in table (15). It is shown that all strains were not associated with Rota virus, E.coli associated with strains 196, 230 while proteus vulgris was associated with strain number 123. Table (16) shows that (25%) of Aeromonas isolated were associated with E.coli, while (12.5%) were associated with Proteus vulgaris.

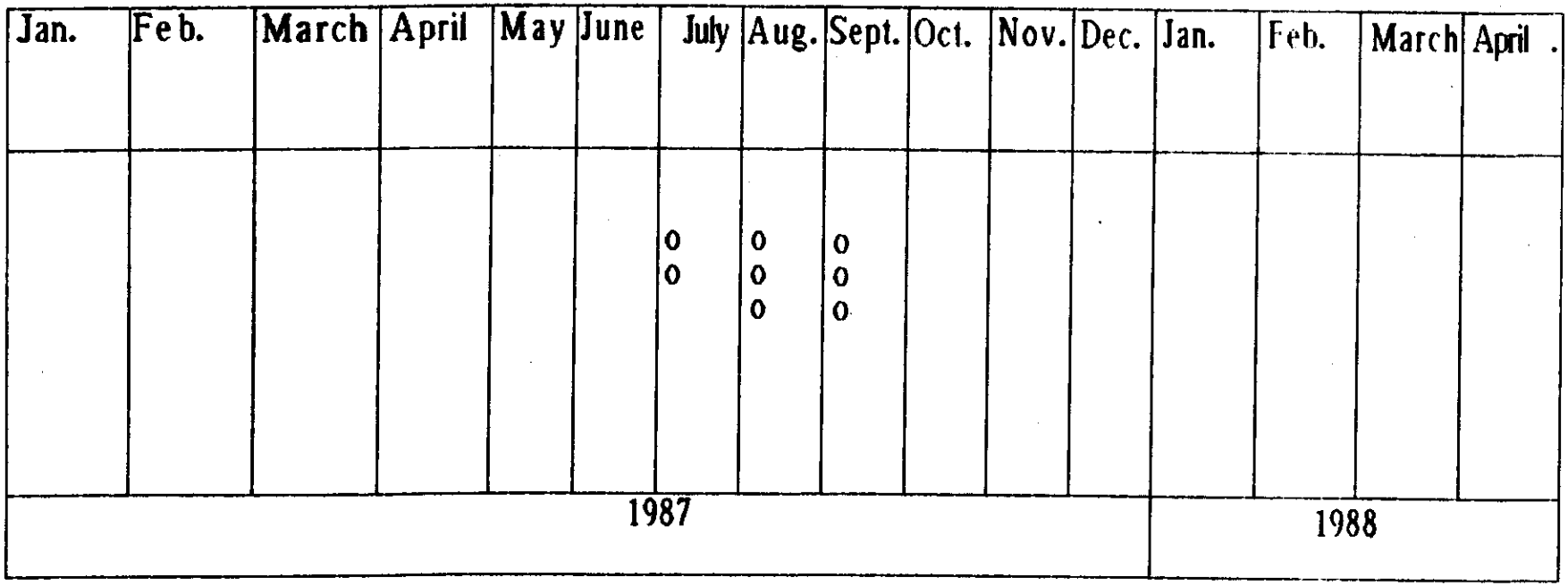
Jan.
Feb.
March
April
May
June
July
Aug.
Sept.
Oct.
Nov.
Dec.
Jan.
Feb.
March
April
1987
1988

Fig. (1)

Table (15) Results of detection of Rota Virus and other associated organisms with 8 strains of Aeromonas hydrophila

Number of strains	Rota virus	Organisms with Aeromonas Hydrophila .
101	Negative	Negative
203	Negative	Negative
196	Negative	E. coli
112	Negative	Negative
123	Negative	Proteus vulgaris
124	Negative	Negative
222	Negative	Ngative
230	Negative	E. coli

Table (16) Incidence of Rota virus, other associated organisms wirh 8 strains of Aeromonas hydrophila

Total no of Aeromonas strains	Incidence of Rota virus	Incidence of E. coli	Incidence of Proteus vulgaris
8	(0%)	2 (25%)	1 (12.5%)

Criteria of pathogenicity of Aeromonas hydrophila

I Haemolysin production

In this study haemolysin was detected by demonstration of B zone of haemolysis around colonies of Aeromonas hydrophila on sheep ampicillin blood agar. The results are shown in tables 17, 18 from these tables it is shown that 6 strain were positive i.e. (75%) of the strains were positive for haemolysin production.

II Haemagglutination activity

Human group (O) red cells were used for haemagglutination activity, Dglucose and Dmannose were used for inhibition of the haemaggultination activity. The results of haemagglutination are shown in table (19), which demonstrated that all (8) strains had haemagglutination activity except strains no 196, and 123. Table (19) shows that (75%) of the strains having haemagglutination activity, Table (20) shows that haemagglutinating strains are not inhibited by glucose and mannose.

Table (17) Results of B zone of haemolysis around 8 strains of Aeromonas hydrophila

Number of strains	Haemolysis around colonies
101	Positive
203	Positive
196	Negative
112	Positive
123	Negative
124	Positive
222	Positive
230	Positive

Table (18) Incidence of haemolytic strains of 8 strains of Aeromonas hedrophila

Total number of Aeromonas	Number of haemolytic strains	Non haemolytic strains
8	6 (75%)	2 (25%)

Table (19) Results of Haemagglutinatin activity of 8 Aeromonas strains .

Number of strains	Haemagglutination Activity
101	Positive
203	Positive
196	Negative
112	Positive
123	Negative
124	Positive
222	Positive
230	Positive

Table (19) Number of Incidence of haemagglutinating strains of Aeromonas hydrophila

Total number	Positive strains	Negative strains
8	6 (75%)	2 (25%)

Table (20) Results of Inhibition of haemagglutination by glucose & manose.

Total number	Strain Inhibited by glucose	Strain Inhibited by manose	Number of strain not inhibited
6	· (0%)	· (0%)	6 (100%)

III Enterotoxin activity

Adrenal Y1 mouse cells were used for detection the enterotoxin activity of Aeromonas dydrophila strains. The results are shown in (table 21) which demonstrates that all strains are toxigenic except no 196, 123, and also the 2 E.coli strains associated with Aeromonas strains no 196, and 230. The incidence of toxigenic strain is (75%) as demonstrated in table (22).

Clinical data which is related to 6 Toxigenic Aeromonas hydrophila among different age groups.

The clinical data are shown in table (23). It is shown that the 6 toxigenic strains were detected only in age group (0 - 2), with (50%) males, (66.6%) with fever, (83.3%) with diarrhoea and vomiting, (66.6%) with duration less than 3 days, and (66.6%) with pus in the stool.

Correlation between enterotoxin activity and phenotypic markers for 6 toxigenic Aeromonas hydrophila

Correlation of lysine decarboxylase & Voges proskauer and arabinose fermentation tests with the 6 toxigenic Aeromonas hydrophila are shown

in table (24), it is shown that correlation was (100%) for lysine decarboxylase and (83.3%) for both Voges Proskauer and arabinose fermentation.

Correlation between haemolysin & Enterotoxin activity for 6 Toxigenic Aeromonas hydrophila

Correlation of haemolysin production and enterotoxigenicity for 6 toxigenic Aeromonas strains are shown in table (25), it is shown that all toxigenic strains are haemocytic.

Correlation between haemagglutination and Enterotoxin activity for 6 toxigenic Aeromonas hydrophila

Correlation of haemagglutination activity and enterotoxigenicity for 6 toxigenic Aeromonas hydrophila are shown in table (26), it is shown that all toxigenic strains are haemagglutinating.

Antibiogram for Aeromonas hydrophila.

Antibiogram for the 8 isolated Aeromonas hydrophila againist 9 different antibiotics are shown in (table 27) as regards sensitive or resistant, the percent of sensitivity are shown in table (28), which is (100%) for cholramphinecol, Amikacine, Tobramycin, Gentamyciny (75%) for

Tetracyclin, (50%) for Cephalolhin (25%) for Enythromycin, (12.5%) for Trimethoprim, which all strains were resitant to Ampicillin.

Table (21) Results of Enterotoxin activity of 8 Aeromonas hydrophila and 2 associated E.coli on adrenal Y1 mouse cells .

Number of strains	Result of Activity
101	Positive
203	Positive
196	Negative
112	Positive
123	Negative
124	Positive
222	Positive
230	Positive
E.coli I	Negative
E.coli II	Negative

E. coli associated with strains no. 196 .
E. coli associated with strain no. 230 .

Table (22) Incidence of toxigenic strains of Aeromonas hydrophila

Total number	Number of toxigenic strain	Negative strain
8	6 (75%)	2 (25%)

Table (23) Clinical data which recated to 6 toxigenic Aeromonas hydrophila among different age groups
D+U.R.T.=Diarrhea associated with upper respiratory tract infection

Age group / no of toxigenic strain	Clinical data											
	Sex		Fever		diarrhoea			duration		stool character		
	male	female	none	› 37.5	Diarrhea	Diarrhea + Vomiting	D + U.R.T	1 - 3	< 3	mucus	pus	none
0 - 2 6	3 50%	3 50%	2 33.3%	4 66.6%	1 16.6%	5 83.3%	-	4 66.6%	2 33.3%	2 33.3%	4 66.6%	-
2 - 5	-	-	-	-	-	-	-	-	-	-	-	-
5 - 15	-	-	-	-	-	-	-	-	-	-	-	-
15 - 45	-	-	-	-	-	-	-	-	-	-	-	-
45 - 60	-	-	-	-	-	-	-	-	-	-	-	-

Table (24) Correlation between enterotoxin activity and phenotype markers for 6 toxigenic Aeromonas hydrophila

Number of Toxigenic strains	Lysine decarboxylase	Voges Proskauer	Arabinose fementation
101	Positive	Positive	Negative
203	Positive	Positive	Positive
112	Positive	Negative	Positive
124	Positive	Positive	Positive
222	Positive	Positive	Positive
230	Positive	Positive	Positive
6 (100%)	6 (100%)	5 (83.3%)	5 (83.3%)

Table (25) Correlation between haemolysin & Enterotoxine activity for 6 Aeromonas hydrophila strains .

Number of Toxigenic strains	Haemolysin Production
101	Positive
203	Positive
112	Positive
124	Positive
222	Positive
230	Positive
6	6 (100%)

Table (26) Correlation between haemagglutination & Enterotoxin activity for 6 toxigenic Aeromonas hydrophila

No. of toxigenic strains	Haemagglutination Activity
101	Positive
203	Positive
112	Positive
124	Positive
222	Positive
230	Positive
6	6 (100%)

Table (27) Antibiogram of 8 isolated Aeromonas strains

Antibiotic and its concentration .	Number of strains							
	101	203	196	112	123	124	222	230
Chloramphenicol	S	S	S	S	S	S	S	S
Amikacine 30 mcq .	S	S	S	S	S	S	S	S
Tobramycin 10 mcq .	S	S	S	S	S	S	S	S
Gentamycin 10 mcq .	S	S	S	S	S	S	S	S
Tetracycline 30 mcq .	S	S	R	S	R	S	S	S
Erythromycin 15 mcq .	R	R	S	R	R	R	R	S
Cephalothin 30 mcq .	S	S	R	S	R	R	R	S
Ampicillin 10 mcq .	R	R	R	R	R	R	R	R
Sulfamethoxazol 23.75 Trime-thoprim 1.25	R	R	R	R	S	R	R	R

S : Sensitive .
R : Resistance .

Table (28) Percent of sensitivity of 8 Aeromonas hydrophila strains for different antibiotics .

Type of Antibiotic	Total no of strains	No. of Sensitive strains	No. of Resistant strains	Percent
Chloramphenicol	8	8		100 %
Amikacine	8	8		100%
Tobramycin	8	8		100%
Gentamycin	8	8		100%
Tetracyclin	8	6	2	75%
Erythromycin	8	2	6	25%
Cephalothin	8	4	4	50%
Sulfamethoxazol + Trimethoprim	8	1	1	12.5%
Ampicillin	8		8	0%