RESULTS

RESULTS

I. General clinical statistical data

Table 1 shows the clinical conditions prevailing in the 400 ocular cases, they are selected with infection of external eye, examined during the course of this study. The table indicates that (43.75%) of the cases are suffering from conjunctival disorders which represent so far the highest incidence among all diagnosed conditions. Diabetic cases (17.5%), Trachoma (13.75%) and post-operative infections (11.25%) came next; while dacryocystitis (6.25%), corneal ulcer (5%) and Blepharitis or discharging sockets (1.25%) were the least frequent incidence. these findings are diagramatically illustrated in figure (1)

Table 2 and figure 2 shows the distribuction of external eye infection of ocular cases according to age and sex of patients and their possible relation to the diabetic history. Certain tendancies in the distribution of cases within each clinical condition whether according to age or sex are apparent in this table. With the exception of conjunctival cases, all the examined cases were more manifested in the over forty years than younger patients. Conjunctivitis, however, was more widespread in younger males or females than in over twenty years ages. Meanwhile, this

conjunctival disorder is more frequent in males than in females of all examined ages. This sex trend is also observed in the dacryocystitis, corneal ulcer, blepharitis or discharging sockets patients. On the other hand, the diabetic cases are more manifested in Over forty years than younger males or females patients More diabetic females than males cases were patients noticed in younger ages, whil more males were observed in over forty years patients

Table 1. The clinical conditions detected in an ocular cases survey and number of cases diagnosed.

Clinical conditions	Number of Cases	Percentage
Conjunctival disorder	175	43.75
Trachoma	55	13.75
Blepharitis	5	1.25
Dacryocystitis	25	6.25
Post-operative infection	45	11.25
Discharging sockets	5	1.25
Corneal ulcer	20	5.0
Diabetic patients suffering from ocular diseases.	70	17.5
Total	400	100

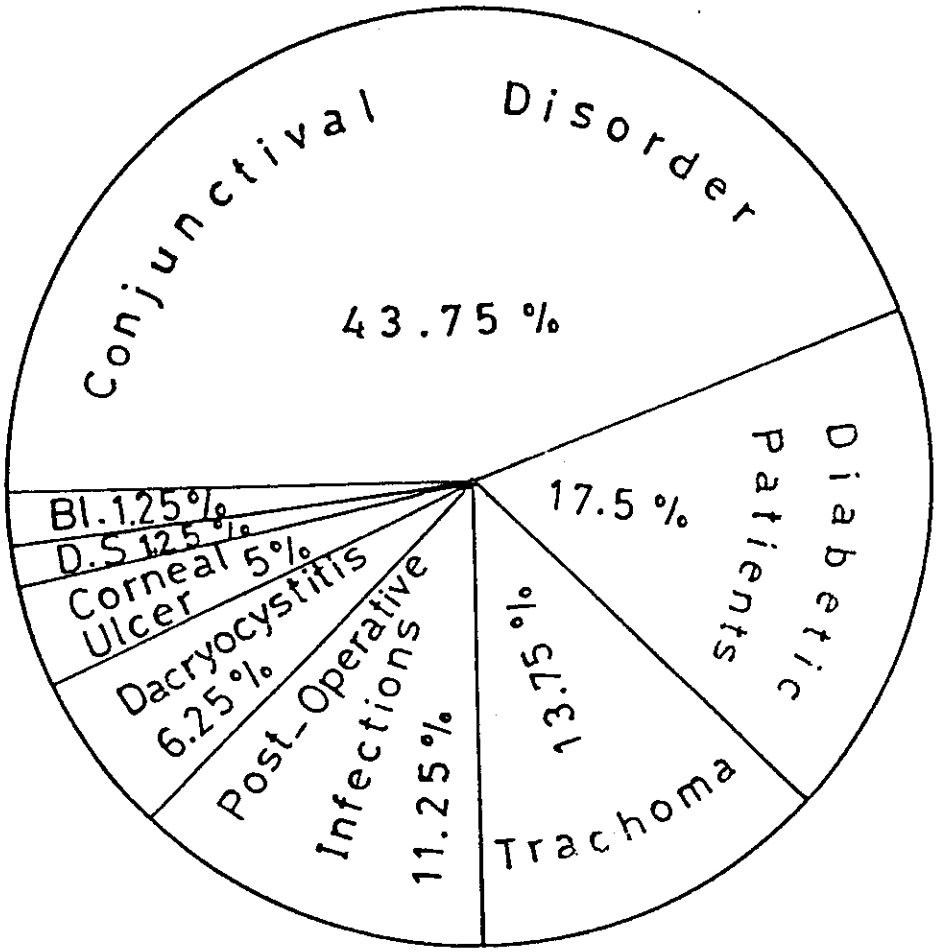


FIG.(1). A DIAGRAMMATIC ILLUSTRATION FOR THE DIFFERENT PERCENTAGE OCCURRENCES OF THE EIGHT REPORTED CLINICAL CONDITIONS. BL. = BLEPHARITIS; D.S = DISCHARGING SOCKETS.

Table 2. Relation between age and sex of patients and diabetic history in ocular cases cultures.

Clinical Conditions	No of cases	Age of pt. (years)	Positive cases			No growth Negative cases			History of Diabetes
			No. of cases	Sex		No. of cases	Sex		
				♂	♀		♂	♀	
Conjunctival Disorder	135	1-20	94	53	41	41	18	23	-
	10	20-30	8	7	1	2	2	-	-
	5	30-40	4	3	1	1	1	-	+
	25	40-60	17	12	5	8	5	3	+
	175		123	75	48	52	26	26	
			70.3%			29.7%			
Blepharitis	2	1-20	1	1	-	1	1	-	-
	1	20-30	1	1	-	-	-	-	-
	1	30-40	-	-	-	1	-	1	-
	1	40-	1	1	-	-	-	-	-
	5		3	3	-	2	1	1	-

Table 2 cont. page 2

Clinical Conditions	No of cases	Age of pt. (years)	Positive cases			No growth Negative cases			History of Diabetes
			No. of cases	Sex ♂	Sex ♀	No. of cases	Sex ♂	Sex ♀	
Dacryocystitis	5	1-20	4	2	2	1	-	1	-
	5	20-30	3	1	2	2	2	-	-
	3	30-40	1	1	-	2	1	1	-
	12	40-	7	5	2	5	3	2	+
	25		15	9	6	10	6	4	
Discharging sockets	1	1-20	-	-	-	1	1	-	-
	-	20-30	-	-	-	-	-	-	-
	1	30-40	1	1	-	-	-	-	-
	3	40-	3	3	-	-	-	-	-
	5		4	4	0	1	1	0	

Table 2 cont. page 3

Clinical Conditions	No of cases	Age of pt. (years)	Positive cases			No growth Negative cases			History of Diabetes
			No of cases	Sex ♂	Sex ♀	No of cases	Sex ♂	Sex ♀	
Corneal ulcer	2	1-20	2	2	-	-	-	-	-
	3	20-30	2	1	1	1	-	1	-
	6	30-40	4	3	1	2	2	-	-
	9	40-	7	7	-	2	2	-	-
	20		15	13	2	5	4	1	
Post-operative infection	6	1-20	5	2	3	1	1	-	-
	4	20-30	3	1	2	1	-	1	-
	6	30-40	5	2	3	1	-	1	+
	14	40-60	11	6	5	3	2	1	-
	15	60-	11	4	7	4	3	1	-
	45		35	15	20	10	6	4	

Table 2 cont. page 4

Clinical Conditions	No of cases	Age of pt. (years)	Positive cases			No growth Negative cases			History of Diabetes
			No of cases	Sex		No of cases	Sex		
				♂	♀		♂	♀	
Diabetic cases with ocular manifestation	9	1-20	5	1	4	4	2	2	+
	6	20-30	5	1	4	1	1	-	-
	5	30-40	4	3	1	1	-	1	-
	15	40-50	12	6	6	3	2	1	-
	25	50-65	20	13	7	5	3	2	3+ve
	10	65-	8	5	3	2	1	1	2+ve
	70		54	29	25	16	9	7	

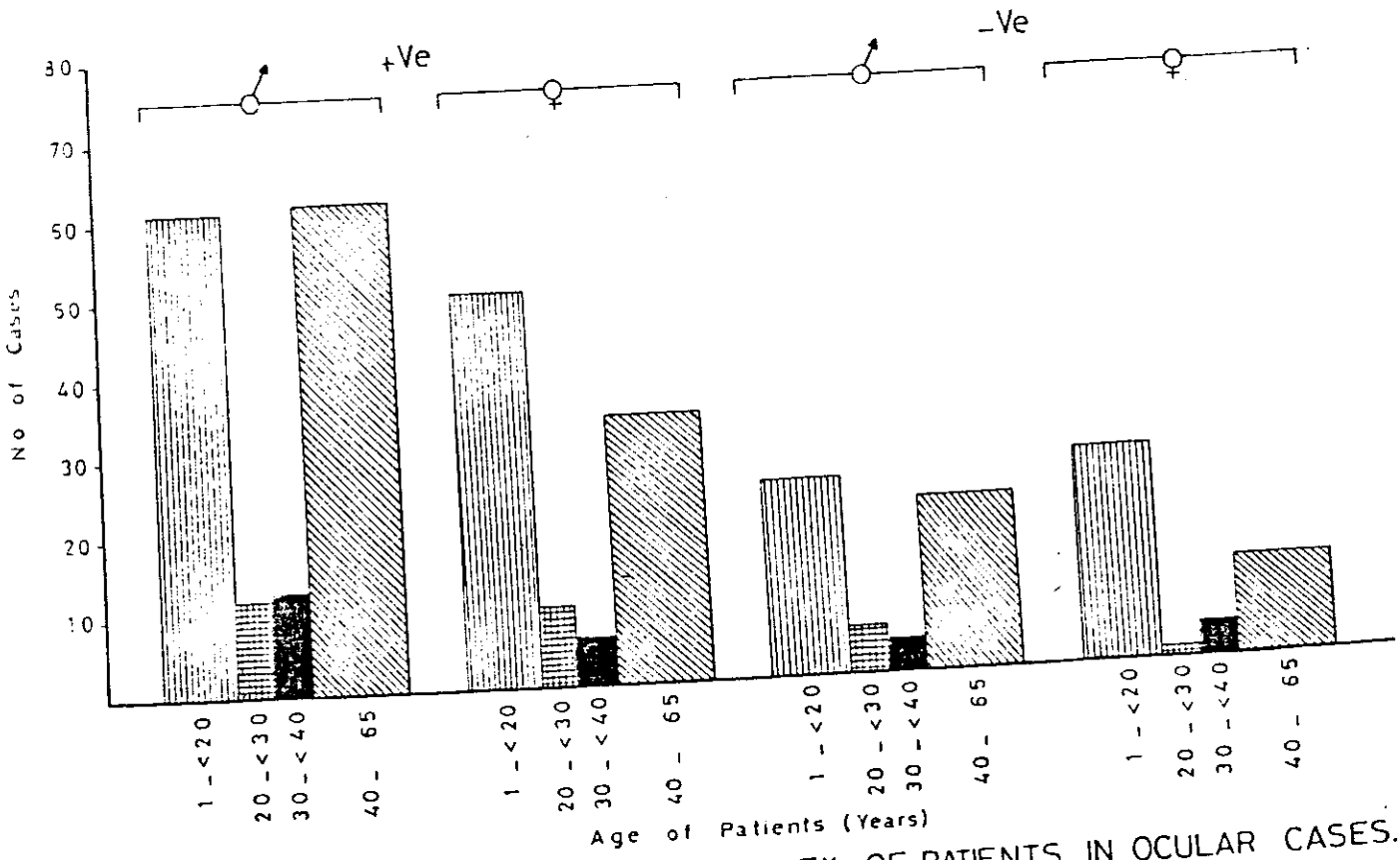


FIG.2. RELATION BETWEEN AGE AND SEX OF PATIENTS IN OCULAR CASES.

II. Bacteriological data

Table 3 shows the positive bacterial cultures in the different clinical conditions. The table indicates that bacterial isolates were reported mostly from discharging sockets followed by post- operative infection, the eye sample of dacryocystitis, conjunctival disorder and blepharitis or corneal ulcers. The least isolates were in trachoma and diabetic patients with ocular manifestation.

Table 4 shows the types of organisms isolated from ocular tissues indicating that Staph. organisms are the prominant organisms affecting the eye. The number of sterile cases. in this table reachs almost 25% of total cases It is noteworthy that Pneumococci was isolated from 14 conjunctival cases and Neisseria from two. investigated cases.

III. Conjunctival disorders

Table 5 shows the results of bacteriological finding of conjunctival swabs from 175 patients. This table shows the number of cases in relation to number of bacterial organisms in conjunctivitis.

Table 3. Positive bacterial cultures in different clinical forms.

Clinical Conditions	Total No of cases	Positive cases		Negative cases	
		No	%	No	%
Conjunctival disorders	175	123	70.3	52	29.7
Trachoma	55	21	38.2	34	61.8
Blepharitis	5	3	60.0	2	40.0
Daryocystitis eye	25	19	76.0	6	24.0
Daryocystitis nose		14	56.0	11	44.0
Post operative infection	45	35	77.7	10	22.3
Discharge sockets	5	4	80.0	1	20.0
Corneal ulcers	20	15	75.0	5	25.0
Diabetic patients	70	54	77.1	16	22.9

Table 4. Types of organisms isolated from ocular tissues

Clinical conditions	Number of isolated organisms from cases											Total No of eye/ sockets
	Staph. aur.	Staph. epid.	Strept. pneum.	Diph- theroid	Anthra- coid	Neiss- eria	Sarcina	Haemo- philus	K	Mixed organs.	No growth	
Normal Control	3	18	-	4	-	-	-	-	-	+	25	50
Conjunctivitis	35	17	14	13	-	-	1	39	4	+	52	175
Blepharitis	2	1	-	-	-	-	-	-	-	-	2	5
Eye	8	5	4	2	-	+ve	-	-	-	-	6	25
Dacryocystitis Nose	9	2	3	1	+ve	+ve	-	-	-	-	11	
Corneal ulceration	6	8	1	-	+ve	-	-	-	-	+	5	20
Discharging sockets	1	2	1	-	-	-	-	-	-	+	1	5
Post operative	25	6	2	-	+ve	-	-	-	1	+	10	45
Diabetic cases	33	21	-	-	++ve	-	1	-	-	+	10	70

N.B. -Control cases for identification of any organisms only for comparison, if there is any significance.

-Trachoma cases are excluded from these bacterial isolates.

Table 5. Positive culture in conjunctival disorder.

Cases in Culture	Number	Percentage
One organism isolated	46	26.3
Two organisms isolated	63	36.0
More than two organisms	14	8.0
Negative cultures (sterile) no growth	52	29.7
Total cultures	175	100

* No growth: indicates that their is other cause for conjunctivitis which may be allergic, Fungal, viral or chlamydial agent.

As indicated in the table the cases which have two organisms are leading followed by cases of only one organism; while the occurrence of more than two organisms is extremely low. The percentage and number of sterile cultures to the isolated cases represent 29.7% of all cases (Figure 3).

Table 6 shows the identification of pathogenic organisms which were isolated from the (175) cases of conjunctivitis from which (123) cases gave postitive culture while in 52 cases no growth was abtained in the used media sterile. The number of cases affected by Haemophilus (31.75%) is higher than Staph. aur.(28.45%). However, the percentage of Staph. aur. in groups of organisms other than Haemophilus is more prominant than any other organisms in that group. H.influenzae follow the percentage of isolated organisms (21.95%).

Table 7 indicates a correlation between the age and sex conjunctival cases. As shown in the table, males were more affected than females in all age groups except in group III. Number of positive cases in preschool age represented 68% of all cases. This finding is illustrated in figure 4.

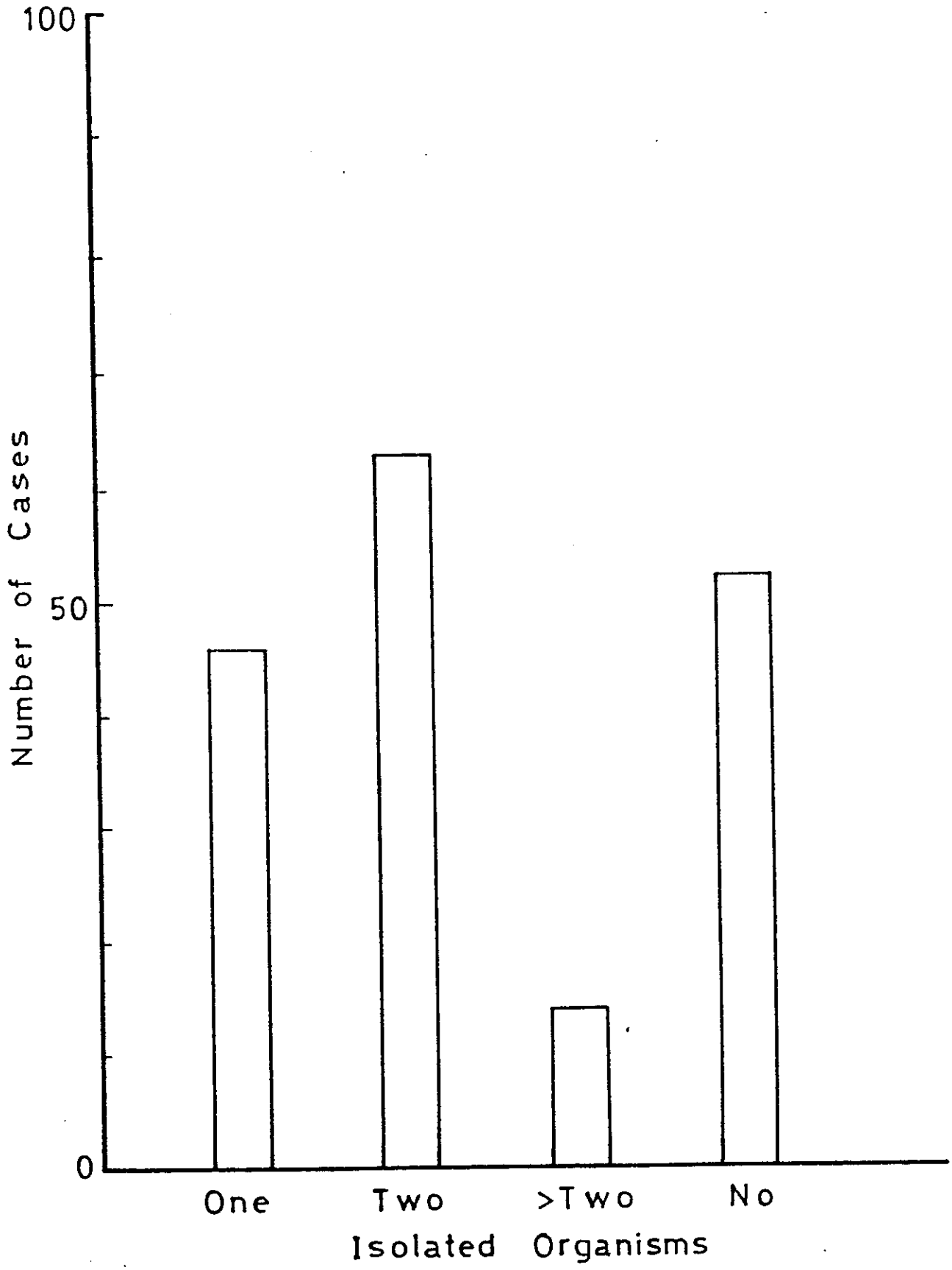


FIG.(3). NUMBER OF CASES IN RELATION TO NUMBER OF BACTERIAL ORGANISMS IN CONJUNCTIVITIS.

Table 6. The pathogens isolated from conjunctival cases

Types of organisms	No of Patients	Percentage
I. *Haemophilus* groups		
a. Koch weeks bacilli	8	6.50
b. Probable K.W. lost or missed before final identification	4	3.30
c. *H. influenzae* (Pfeiffer bacilli)	27	21.95
Total number of haemophilus groups	39	31.75
II. Other organisms		
Staph. aur.	35	28.45
Staph. epidermitis	17	13.82
Streptococcus viridens and *S. pneumoniae*	14	11.38
Corynebacterial xerosis	13	10.56
Klebsiella, *E. Coli*	4	3.25
Sarcina	1	0.81
Total number of other organisms excluded the non Haemophilus	84	68.29

Table 7. The correlation between the age and sex in conjunctival cases.

Age group (years)	Total No of cases	+ve				-ve	
		♂		♀			
		No	%	No	%	No	%
Group I = <1	45	20	26.7	11	22.9	14	26.9
Group II = 1-<3	24	10	13.3	8	16.7	6	11.9
Group III = 3-<6	48	14	18.7	17	35.4	17	32.7
Group IV = 6-<15	18	9	12.0	5	10.4	4	7.7
Group V = 15-40	15	10	13.3	2	4.2	3	5.8
Group VI = >40	25	12	16.0	5	10.4	8	15.4
Total cases	175	75	100.0	48	100.0	52	100.0
		123					

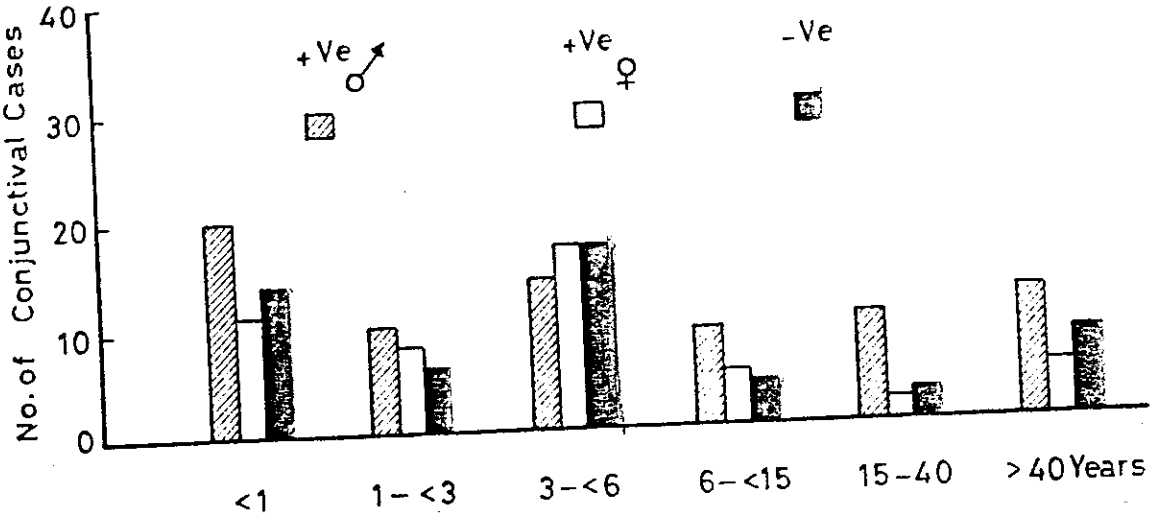


FIG.(4).THE CORRELATION BETWEEN AGE AND SEX IN CONJUNCTIVAL CASES.

Table 8. Shows a correlation between age group and the causative organisms. Staphylococci were more frequently in all age group followed by Haemophilus and Diphtheria. Positive Staph. cases in preschool age were 63.3%. In that age- groups I,II and III- 38 cases were identified, 27 of which were Haemophilus, the other 9 cases were Diphtheria. When further identification of 35 Haemophilus strains (Table 9) was made by haemagglutination test, H. influenzae was isolated more frequently (77.14%) than Kock Weeks bacilli (22.85%).

Table 10. serotyping of 27 strains of H. influenzae resulted in the identification of types a (40.74%), C (29.62%) and D (14.81%). Four strains (14.81%) were considered non typable or non Virulent strains.

IV. Fungal data:

Table 11 indicates the organisms in fungal ocular cases in relation to age and sex. As shown in the table the figures infections are more common in diabetic than non diabetic cases and in males than females. The most common organisms were Candida alb. (Figures , a and b) followed by Aspergillus (Figure 6) and Penicillium (Figure 7). Also the most common infected ages were above 40 yrs.

Table No 8. Correlation between age group and the causative organisms in the conjunctive.

Age group	Isolated organisms					
	Staph.	Diphtheria	Haemophilus	Strept.	K	Sarcina
Group I	15	3	9	3	1	-
Group II	9	1	9	-	-	-
Group III	14	5	9	-	1	-
Group IV	5	4	3	-	2	-
Group V	6	-	-	-	-	-
Group VI	11	-	-	-	-	-

Table 9. Further identification of 35 Haemophilus strains

	Haemophilus influenzae -ve Haemagglutination		Koch week bacilli +ve Haemagglutination	
	No	%	No	%
Haemagglutination test	27	77.14	8	22.85

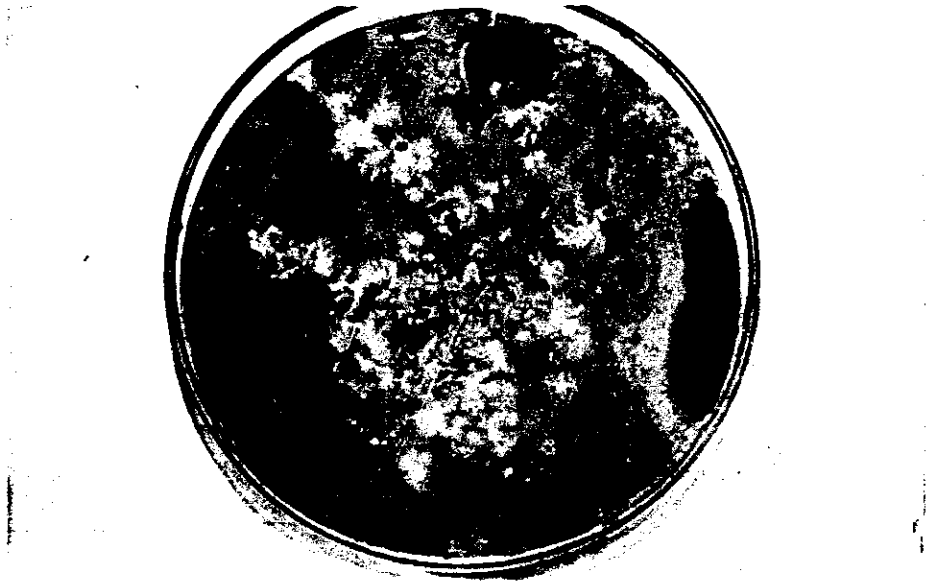
Table 10. serothping of 27 strains of H. influenza.

Types	Number	Percentage
a	11	40.74
b	0	0
c	8	29.62
d	4	14.81
e	0	0
f	0	0
non typable	4	14.81
Total	27	100

Table 11. Fungal organisms in ocular cases in relation to age and sex

Clinical cases	Total cases	No of +ve cases	Age (years)	Sex	Types of Fungus		
					Candida	Aspergillus	Penicillin
Discharging sockets	5	1	50	♂	-	+ve	-
Dacryocystitis eye	25	1	23	♂	+ve	-	-
nose		1	50	♂	+ve	-	-
Corneal ulcer	20	3	37	♂	+ve	-	-
			40	♂	-	+ve	-
			35	♂	-	-	+ve
Diabetic cases with ocular manifestation	70	9	38	♂	+ve	-	-
			49	♀	+ve	-	-
			44	♀	-	+ve	-
			47	♂	-	-	+ve
			65	♂	+ve	+ve	-
			61	♂	+ve	+ve	-
			73	♀	+ve	-	-
			71	♂	+ve	+ve	-
			73	♂	+ve	-	+ve
Total	120	15			10	6	3

5 a



5 b

Figure 6. Coloured Photographs of Aspergillus spp. isolated from ocular cases;

a: colonies of Aspergillus;

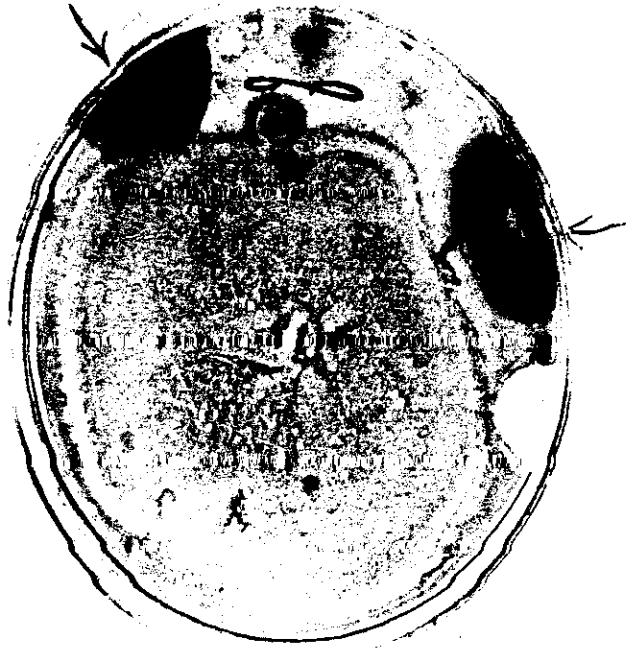
b: microscopic photograph of A. niger;

c: microscopic photograph of A. flavus.

- stained with Locto-Phenol cotton blue

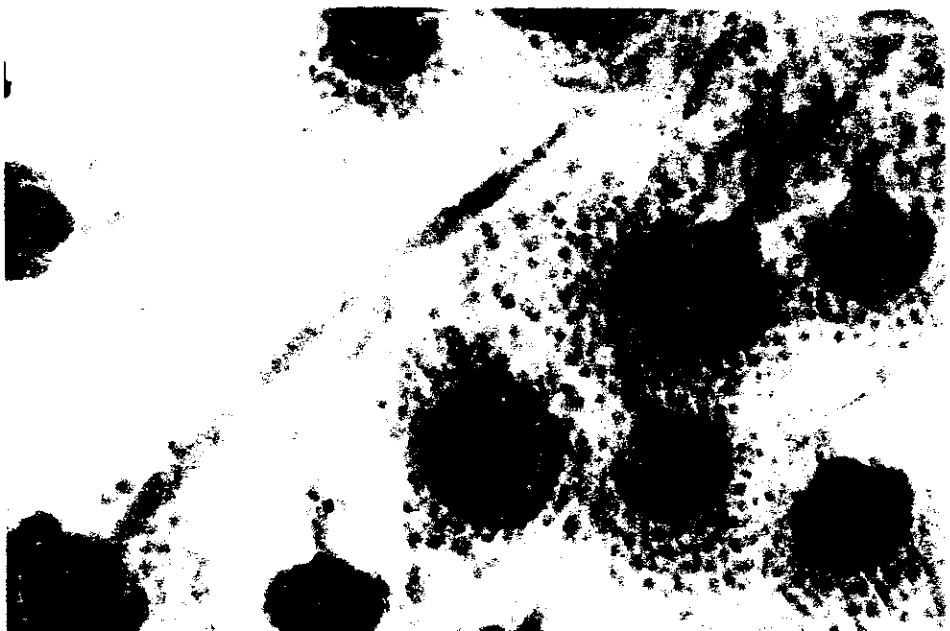
- Magnification X 1000

X 400



6a

6b



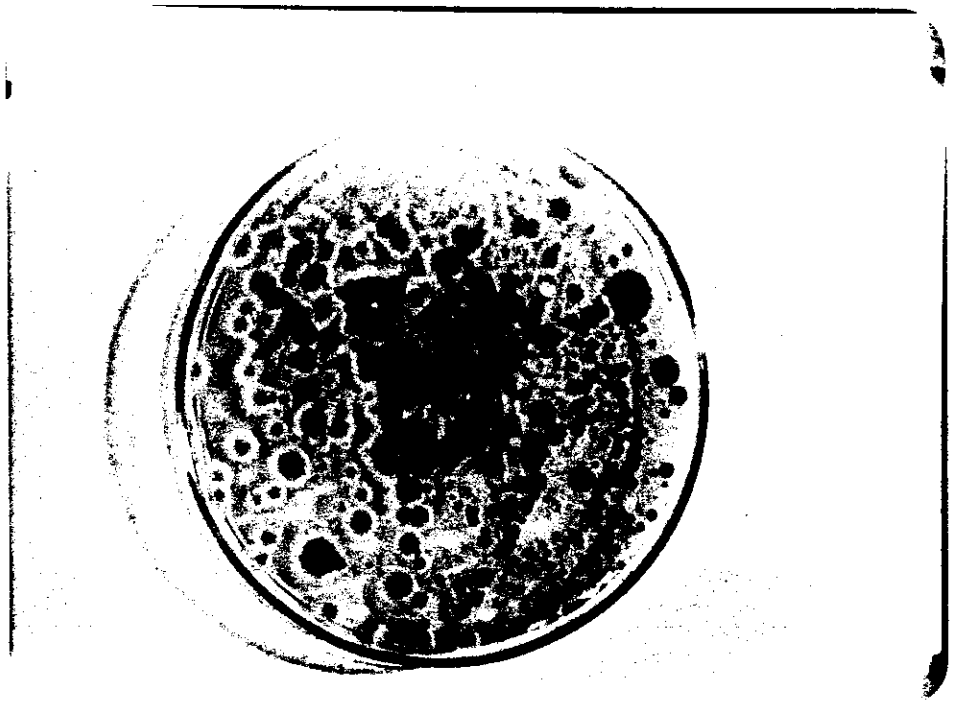
6c

Figure 7. Coloured Photographs of *Penicillium* isolated from ocular cases:

7a: colonies of *P. notatum.*

7b: microphotograph of *Penicillium*

- Magnification X 400



7a

7b

Table 12 Shows types of Aspergillus infection which is identified as A. flavus (Figure 6c) and A. niger (Figure 6b). The diagnosis of 6 cases proved the percentage of infection by A. niger to be double as infection by A. flavus.

V. Trachoma:

Table 13 shows the results of immunofluorescene diagnosis of 55 cases suspected clinically as positive Trachoma. The clinical diagnosis indicated that males are more affected by Trachoma than females specially below the age of 10 years.

In the clinically suspected - ve group the females were more common than males. School age is the main age group of Trachoma in both sexes. Direct films stained by giemsa stain from all cases showed negative results.

IF test gave 21 positive results or 38% of the clinically suspected Trachoma +ve cases. Figure 8 shows no elementary = it is a negative result.

Table 12. Types of Aspergillus infection

Total cases	Species			
	A. Flavus		A. Niger	
	No	%	No	%
6	2	33.3%	4	66.7%

Table 13. Immunofluorescence diagnosis of cases diagnosed clinically as positive Trachoma.

Age group	Sex ♂	Sex ♀	Giemsa stain	I.F.T. +ve	I.F.T. -ve	Total
Positive clinical cases						
5 months-<12 ms	4	1	-ve	1	4	5
1 year-<3 years	9	6	-ve	7	8	15
3 years-<6 years	3	7	-ve	2	8	10
6 years-<12 years	9	6	-ve	8	7	15
Negative cases taken as control with different ages						
20-60 years	3	7	-ve	3	7	10
Total	28	27	-	21	34	55

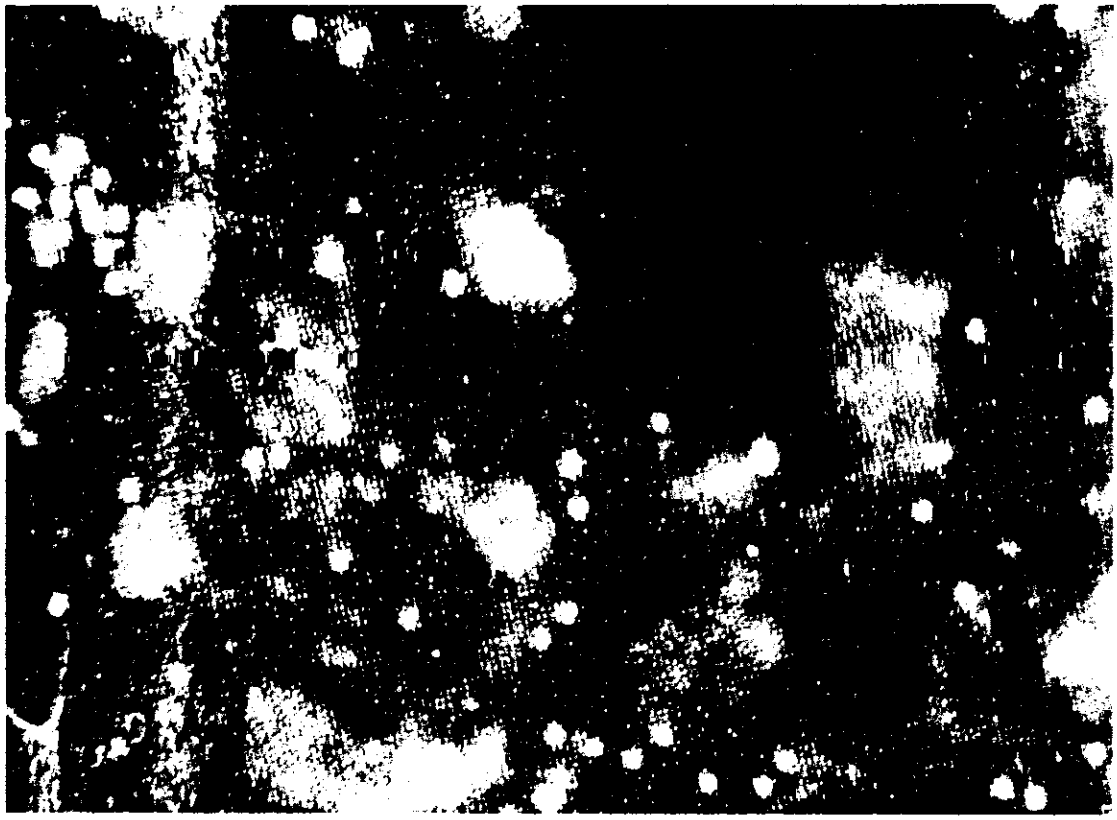
Figure 8. Coloured micrographs of trachoma positive and negative cases:

8a: Trachoma-positive IF elementary bodies;

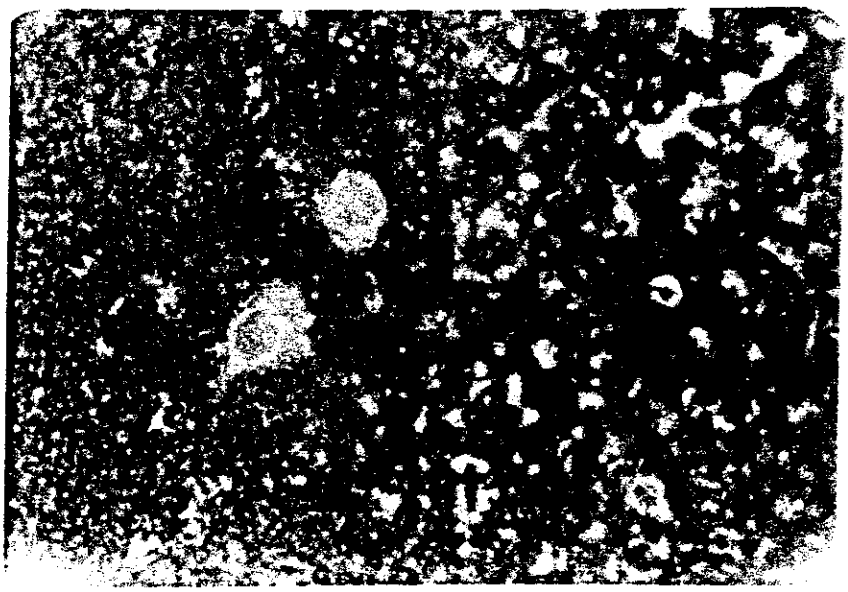
8b: Trachoma-negative IF test.

- IF test at a magnification of approxima tely of X 500

8a



8b



VI.Discharging sockets:

Table 14 shows that the most common organism associated with the discharging sockets is staphylococci specially S. epidermidis. A. niger was isolated from a case of proptosis after enucleation of the eye.

VII. diabetes:

Table 15 shows the relation between the duration of illness, age and type of infection in 70 diabetic cases. The table shows that bacterial and fungal affection increase with increasing age (Figure 9) and the duration of illness. Fungal affection is more common than bacterial in old debilitating persons, specially in prolonged history of chronic diabetic cases. The fasting blood sugar in these cases according to the measurements of Institute of Diabetes ranged from 140 mg% up to 500 mg%

Table 16. shows the distribution of different species of fungi among diabetic cases was made Candida alb. was more encounter (77.8%), followed by Aspergillus (44.4%) and Penicilium (22.2%). In some diabetic cases, more than one fungus was encounter

Table 14. Discharging sockets

Type of operation	Sex	age years	Type of organism
Evisceration of the eye	♂	38	Staph. epidermidis
Endophthalmitis	♂	40	Staph. epidermidis
After glaucoma	♂	60	Staph. aur., pneumococci
Proptosis of the eye	♂	50	Aspergillosis
After trauma	♂	15	No growth

Table 15. Relation between the duration of illness, age and type of infection.

Age group	No of cases	Duration of illness	Type of infection	
			Bacterial	Fungal
1 month - 5 months	2	Hereditary from mother	+ve	-
1 year - <20 years	7	5 months - 3 years	+ve	-
20 years- <30 years	6	2 months - 3 years	+ve	-
30 years- <40 years	5	1 year - 4 years	+ve	+ve
40 years- <50 years	15	2 years - 7 years	+ve	++ve
50 years- <60 years	25	2 years -15 years	++ve	+++ve
60 years above	10	1 year -16 years	++ve	++++ve
Total	70			

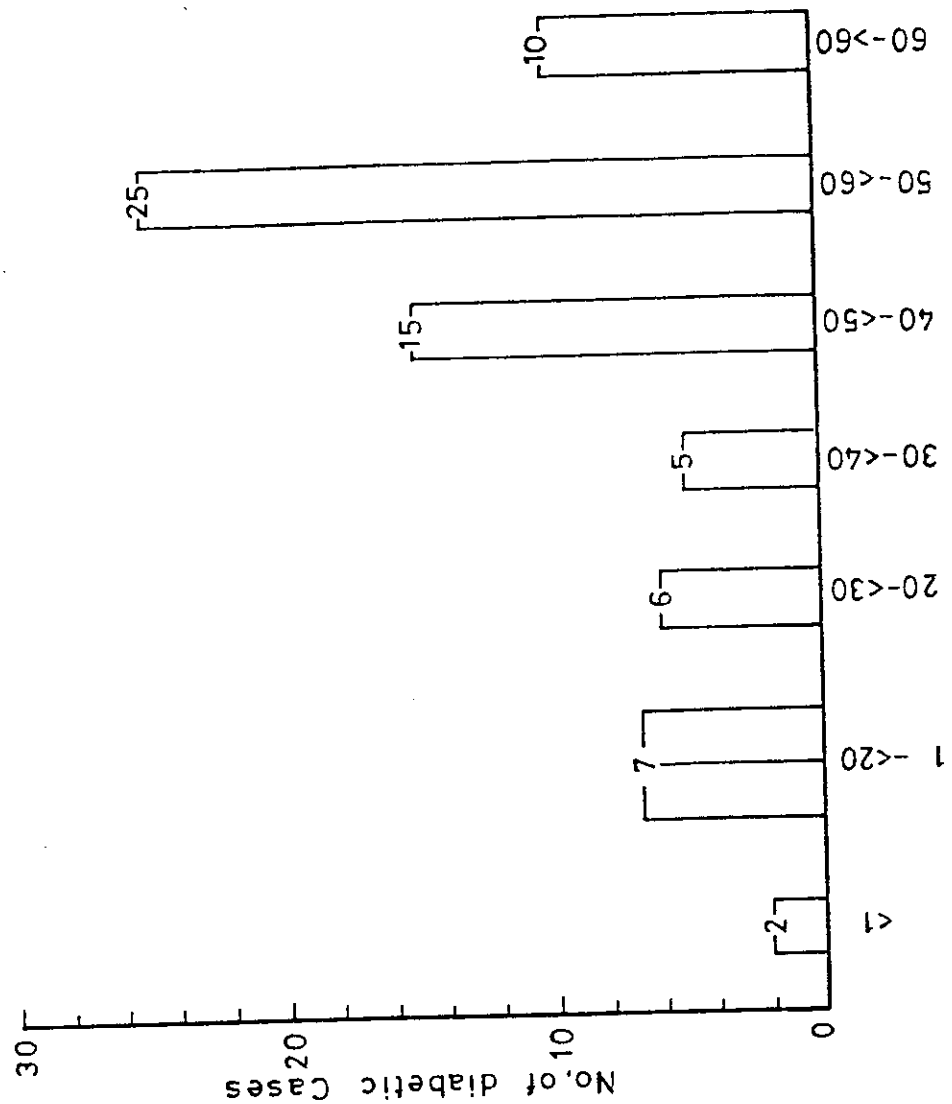


FIG.(9). RELATION BETWEEN AGE AND No. OF DIABETIC CASES.

Table 16. The distribution of different species of fungi among diabetic patients with ocular manifestation

Number of patients giving posti-ve isolate	Candida alb.	Aspergillus	Penicillium
9	7	4	2

Table 17 shows the relation between age, sex, diabetes and type of operation in post-operative cases and the isolated organisms. The table indicates that the most common type of intra-ocular operation was cataract extraction. With increasing of age , the number of operative cases increased. Cataract extraction is more common in diabetic cases and males were affected than females.

VIII. Results of the antibiotic sensitivity test:

The test was done for some of the isolated organisms. Staph. aureus- 100 strains were usually sensitive to ampicillin (+++) and garamycin (+++) followed by polymyxin B(++) and completely resistant to terramycin. Staph. epidermidis - (60 strains) were also more sensitive to garamycin (+++) and ampicillin (+++). All there strains were highly resistant to all antibiotics in the discharging socketes and post-operative infections (50 strains). Chloramphenicol shows variable results.

Table 17. Relation between age, sex, history of diabetes, type of operation in post-operative cases and the isolated organisms.

Age group	No of cases	Sex		Types of operation				Diabetic History	Organisms isolated			
		♂	♀	Extra-ocular	Intra-ocular				Staph.	Staph.	Pneum.	Other
					Cat[1]	Retina[2]	Glauc.[3]					
1-20 years	6	3	3	+	-	-	-	-	4	-	1	-
20-40 years	10	6	4	-	8	2	-	-	6	2	-	-
40-60 years	14	8	6	-	14	-	-	6+ve	9	2	2	+ve
Above 60 years	15	10	5	-	15	-	-	7+ve	8	2	3	+ve
	45	27	18		37	2	-		27	6	6	

1 Cataract
2 Retinal detachment
3 Glaucoma

DISCUSSION