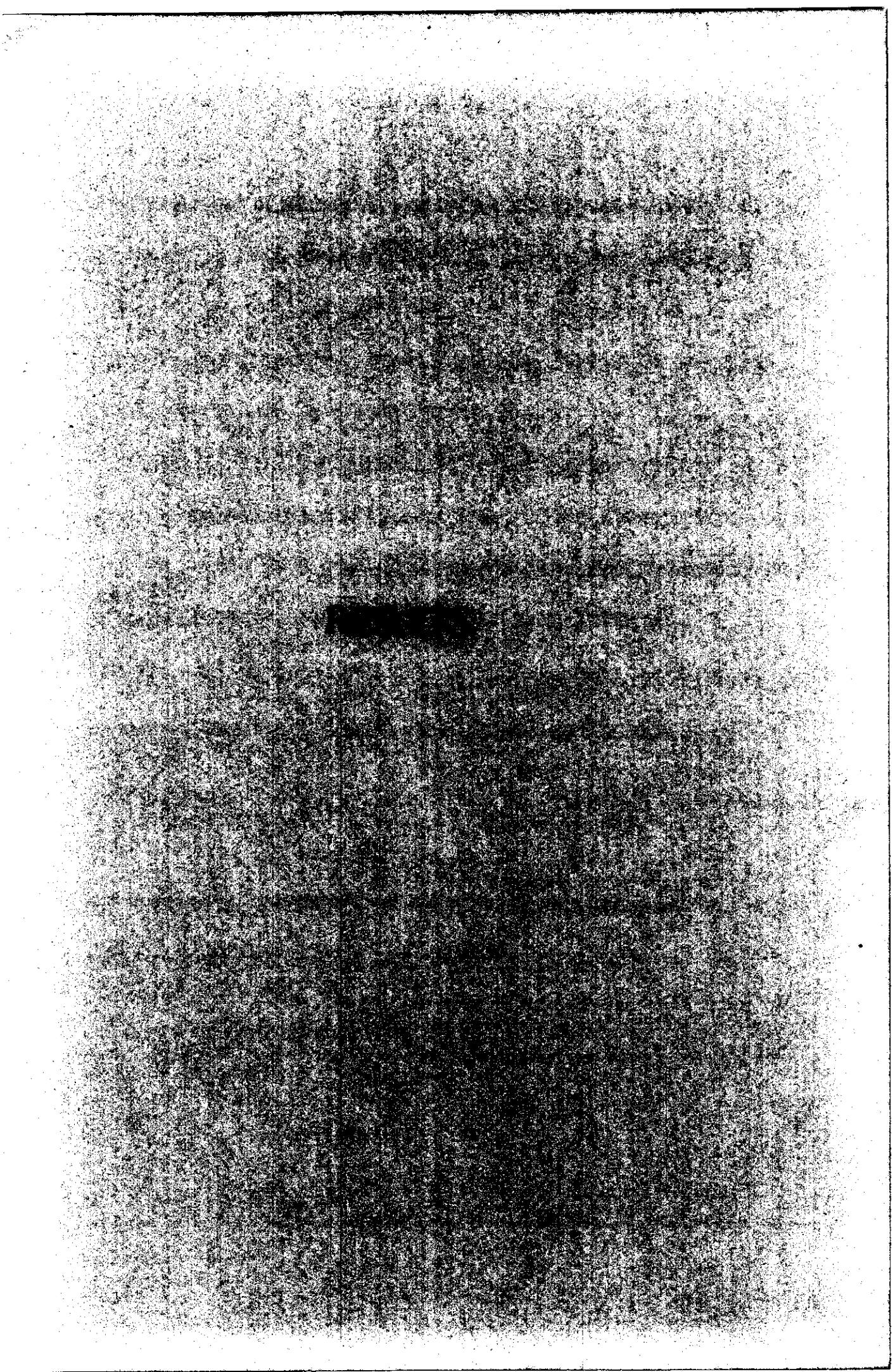


Table (1)

Incidence of haemolytic staphylococcal strains isolated from different pyogenic infections.

Types of infection	Number of cases	No. of haemolytic strains	%
Septic wounds	22	10	45.4
infected burns	18	9	50
abscesses	35	30	85.7
Total number	75	49	65.3

This table shows that the highest incidence of haemolytic strains is found among staphylococcal isolates from abscesses (85.7%) followed by septic wounds (45.4%) then infected burns (50 %).

Table (2)

Incidence of haemolytic staplylococcal strains isolated from nasalswabs taken from apparently healthy individuals

Type of individual examined	No. of cases	No. of haemolytic strains	%
Hospital staff	30	12	40 %
General population	20	6	30 %
Total number	50	18	36 %

This table shows that the highest incidence of hamolytic staphylococcal strains is found in isolates from hospital staff (40 %). followed by isolates from general population (30 %).

Table (3)

Incidence of coagulase production among staphylococcal isolates from cases and carriers.

Type of cases	No. of cases	No. of Coagulase positive strains by slide method	No. of Coagulase Positive Strains by tube method
Pyogenic infections	10	7	8
	9	7	7
	30	33	25
Carriers	18	15	15
Total	67	52	55

This table shows that tube coagulase was found to give a higher incidence (82%) than the slide coagulose (77%).

Table (4)

Incidence of mannite fermentation among staphylococcal isolates from cases and carriers.

No. of isolates	+ ve mannite	%
55	55	100

This table shows that the fermentation of mannite in all cases and Carriers were 100 %.

Table (5)

Antibiogram pattern of staphylococcus aureus isolated from pyogenic infections (40 strains) and from carriers (15 strains)

Antibiotic	Concentration/ disc	No. of strains isolated from pyogenic infections				No. of strains isolated from nasal carriers							
						No.of strains isolated from general population				No. of strains isolated from hospital staff			
		No. of sensitive *	%	No. of resistant •	%	No. of sensitive *	%	No. of resistant •	%	No. of sensitive *	%	No. of resistent •	%
Penicillin G	10 ug	4	10	36	90	4	80	1	20	2	20	8	80
Chloramphenicol	25 ug	8	20	32	80	3	60	2	40	3	30	7	70
Tetracycline	30 ug	5	12.5	35	87.5	2	40	3	60	2	20	8	80
Cefalotine	30 ug	32	80	8	20	4	80	1	20	8	80	2	20
Gentamycin	10 ug	35	87.5	5	12.5	4	80	1	20	9	90	1	10
Rifampicin	30 ug	40	100	-	-	5	100	-	-	10	100	-	-

* *Sensitive means, that inhibition zone is more than 10 mm*

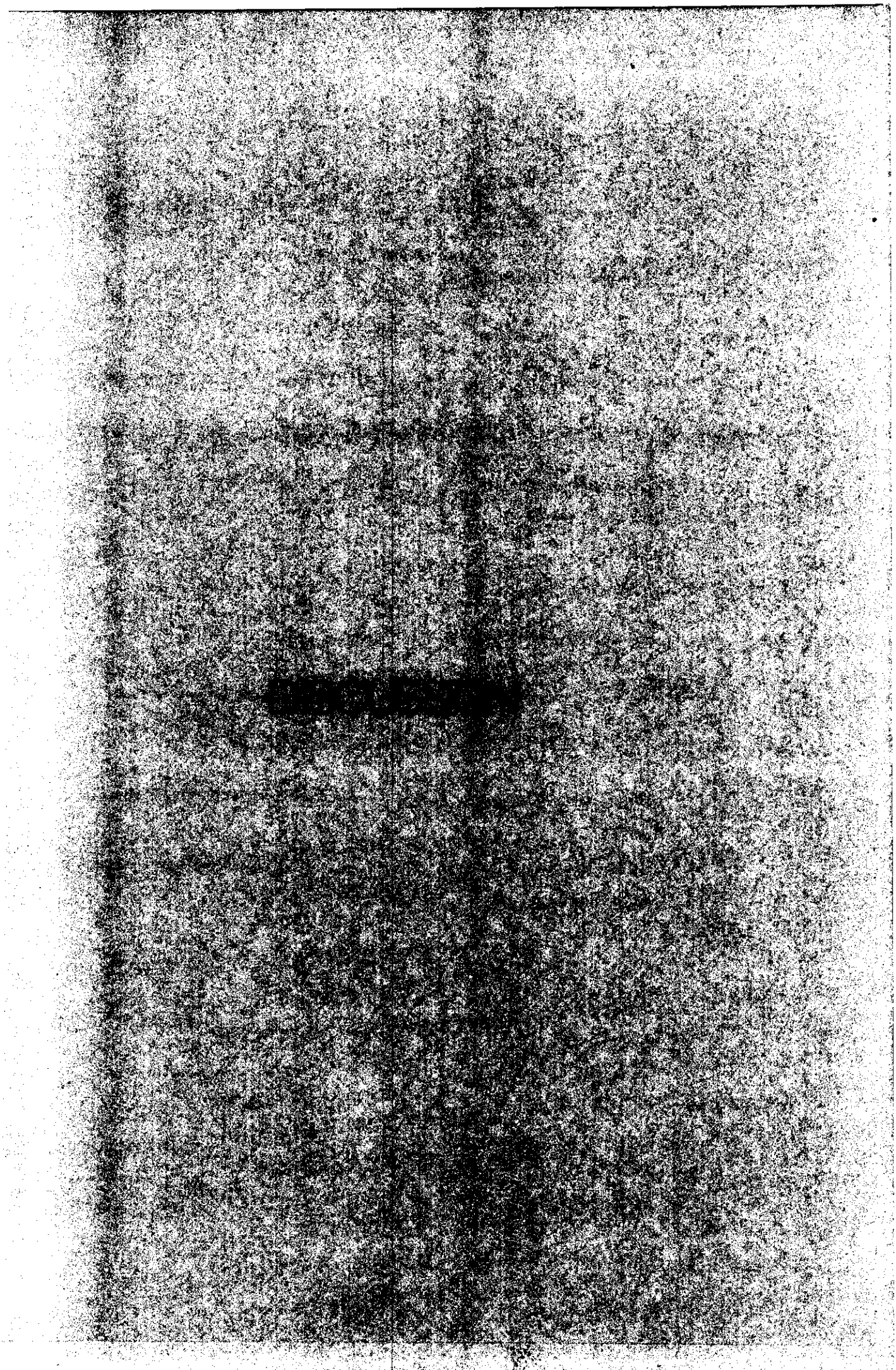
• *Resistant means, that inhibition zone is less than 10 mm*

Table (6).

Incidence of penicillinase Production detected by filter paper acidometric methed among staphylococcus aureus strains isolated from cases and Carriers .

Tested strains (55)	Penicillinase production by filter paper acidometric method .	%
Penicillin resistant (45)	45	100
Penicillin sensitive (10)	——	——

This table shows that all penicillin. resistant strains detected by disc diffusion method produce penicillinase (100%) and all the sensitive strains are non penicllinase producers.



D I S C U S S I O N

Staphylococcus aureus has remained one of the major causes of morbitiy and mortality mainly because of its particular epidemiologic cycle, and the emergence of strains resistant to multiple antimicrobial agents as well as to the defects in host resistance (Gedebou , 1982).

Staphylococcal infections tend to be acquired in hospital, and the proportion of drug resistant strains found in Carriers is much higher among hospital personell than in the general population (Munch - Peterson, 1962). The nose of healthy individuals propably form the largest breading ground for the pathogenic staphylococci, and it was found that staphylococci from the nose can be responsible for septic lesion in the same individual. Diguid et al, (1978) stated that staphylococcus aureus grows harmlessly on the moist inveginated skin in the nostrils in 10 to 30% of healthy persons.

It appears therefore that antibiotic resistance in staphylococci are ecologically associated rather than genetically linked. Each new resistance acquired by a strain, increases the chance that it will persist long enough in the hospital environment to become resistant to further

antibiotics either by gene transfer or by mutation (Dyke et al, 1970).

Resistant strains were found to be penicillinase producers, when Finland, (1954) draw the attention to the presence of staphylococcal resistance to penicillin in Boston city hospital. Resistance of staphylococcal strains to penicillin depend on their ability to produce the enzyme penicillinase which is abeta lactamase that destroys the the beta lactam ring of the penicillin molecule, and as a result inactivates benzyl Penicillin. In most hospitals, because antibiotics are used extensively, prevealent staphylococci are resistant to commonly employed antimicrobial drugs (Jowetz et al, 1982).

In the present work a total of (75) pus specimens taking from cases having pyogenic infections and (50) nasal swabs taken from apparently healthy individuals were examined bacteriologically.

Staphylococcus aureus was identified on the basis of haemolytic property on the blood agar, colonial morphology, mannite fermentation and coagulase production.

In the present work, the highest incidence of

haemolytic strains was found among staphylococcal isolates from abscesses (85.7%) followed by septic wounds (45.4%) then infected burns (50%).

On the other hand the incidence of haemolytic strains was found to be higher among staphyloccal isolates from hospital staff (40%) than that among staphylococcal isolates from general population (30%), this result agreed with paul (1982) who stated that the nasal carrier rate of S. aureus among hospital staff is higher than that among non hospital population.

The fermentation of mannite by most strain of S. aureus is helpful in its differentiation from S. epiddrmidis (Zinsser, 1980). The result of the present study, all the haemolytic strains isolated from pyogenic infections and nasal carriers were mannite fermenters (100%).

Coagulase production, which is widely used and generally accepted criterion for the identification of frankly pathogenic staphylococci (S. aureus), Buchaan and Gibbons, 1974).

As regards the coagulase production among isolated

staphylococcal strains, the tube coagulase was found to give a higher incidence (82%) than the slide coagulase (77%).

Staphylococcus aureus strain were isolated from only (55) cases as indicated by coagulase test. From this result it is apparent that S. aureus was responsible for about (53.3%) of pyogenic infections and about (36%) of nasal Carriers.

All the staphylococcal strains isolated and proved to be pathogenic were tested for sensitivity to (Penicillin, chloram phencol, tetracycline, cefalotine, gentamycin, and rifampicin), using the discdiffusion method.

As regards the antibiotic sensitivity pattern of the isolated staphylococcal strains, in the present study, rifampicin was found to be the most effective drug against all the strains isolated from pyogenic infections and those isolated from nasal carriers (100%). while gentamycin and cefalotine were found to be effective against 87% and 80% rospectively.

The highest resistance was found against penicillin G, followed by tetracycline then chloramphencol as follows

90%, 87.5, 80 % of staphylococcal isolated from pyogenic infections. On the other hand the highest resistance was found against penicillin G, followed by tetracycline then chloramphencol as follows 80%, 80% , 70% of staphylocaccal isolated from nasal Carriers (hospital staff). But in case of isolates from general population, the incidence of penicillin resistant strains account for 20% only, this agreed with (Milgram, 1982) who stated that 5 - 15% of strains of S. aureus are penicillin resistant and the precentage of penicillin resistant strains isolated in hospital is much higher 65 to 90 percent.

Increasing resistance of S. aureus to penicillin was recognised soon after its introduction in clinical practice in (1941). An increasing incidence of staphylococcal penicillin resistance from 14% in (1944) to 59% in (1948) was repoted by (Barber, et al 1948).
During the next few years simillar reports followed from hospital all over the world . In egypt, El. Batawi et al, 1975) reported that all the strains were 100% resistant to penicillin.

The association of the ability to produce (large amounts of a good penicillinase with resistance to several antibiotics was not due to the presence of the genetic determinants for all the antibiotic resistance on a single extrachromosomal particules as in enterobacteriaceae. There are no evidence of genetic linkage between resistance to two unrealated antibioties (Dyke et al, 1970).

Penicillin, chloramphencol and tetracyctine, these three drugs are the most commonly used drugs in our hospitals for many years ago, about 80% of patients in our hospitals receive tetracycline, penicillin, or chloramphencol seperately or in combination in a habhazard manner as a prophylactic or therapeutic. Recent years have seen an accumulation of multiple antibiotic resistance strains particulary in hospital. Acquisition of a resistant strain is more likely if the patient is being treated with one of the antibiotics to which the microorganism is resistant. Each resistance trait was associated with a plasmid and apparrently not linked on the extrachromosomal units. (Robert, 1980).

Keeping in mind the increasingly incidence of penicillin resistant staphylococci due to penicillinase production, a simple rapid test is highly needed especially in hospital laboratory.

In the present work all penicillin resistant strains as determined by disc diffusion method were proved by the filter paper acidometric method to be positive penicillinase producers, and all penicillin sensitive strains were found to be negative pencillinase producers. This proved by the work of Lacey (1975) who stated that all penicillin resistant strains tested were found to be penicillinase producers.

The acidometric method for detection of penicillinase production used in this work has several favourable features which make it a convenient method for the routine detection of penicillinase producing staphylococci It is simple, rapid (give results after 60 minutes) and easily performed economically, so that several strains may be tested on the same peice of filter paper. It is also gives clear cut results .

From this study we can come to the conclusion that the filter paper acidometric method is a rapid, simple and reliable method which can be recommended for detection of penicillinase producing penicillin resistant staphylococci because the resistance to penicillin is now a clinical and epidemiological problem, consequently the susceptibility of strains isolated from any infections must be determined by an appropiate laboratory test.