



Isolation of Bacterial Pathogen and Antibiotic Sensitivity Analysis of Breast Abscess in lactating and non-lactating women

Nandni kumari,

Isra University Hyderabad



Introduction

Breast abscess = localized pus collection in breast tissue, common in women.

Two types: lactational (reproductive age, breastfeeding) and non-lactational (perimenopausal, often with comorbidities).

Clinical features: painful, swollen, reddish breast mass; may be associated with fever and malaise.

Pathogenesis: bacteria enter via cracked/fissured nipples; milk stasis in lactating women promotes bacterial growth.

Common pathogens: *Staphylococcus aureus* (esp. MRSA), *Streptococcus* spp., *E. coli*.

Early culture & sensitivity with prompt antibiotics prevents recurrence and complications.

Objective

To isolate and identify bacterial pathogens from breast abscess samples in women attending tertiary care hospitals in Rawalpindi Pakistan, and to evaluate the antimicrobial susceptibility patterns of the isolates.

Methods and materials

The study was conducted from November 2024 to February 2025 at Amjad Naeem Laboratory, Rawalpindi, Pakistan.

It included women presenting with breast abscess at different hospitals and clinics in the region.

A total of 88 pus samples were collected in sterile containers and transported to the laboratory following standard protocols.

Samples were subjected to Gram staining and cultured on Nutrient Agar and Mannitol Salt Agar, with incubation at 37°C for 18–24 hours and extended to 48 hours if needed. Colonies were identified based on morphology and confirmed by catalase and coagulase spot tests.

Antimicrobial susceptibility testing was performed on Mueller-Hinton agar using the Kirby-Bauer disc diffusion method, and the antibiotics tested included ampicillin, ciprofloxacin, levofloxacin, amikacin, clarithromycin, sulfamethoxazole, streptomycin, and moxifloxacin.

Results were interpreted according to Clinical and Laboratory Standards Institute (CLSI) 2019 guidelines.

Results

The mean age of patients was 30.3 years (range 15–50), with most cases in the 24–35 year age group. Out of 84 samples, 68 (81%) showed bacterial growth, and 3 cases had polymicrobial growth.

Predominant isolates were Gram-positive bacteria (*Staphylococcus aureus*, *Streptococci*) and Gram-negative bacteria (*Escherichia coli*, *Pseudomonas aeruginosa*).

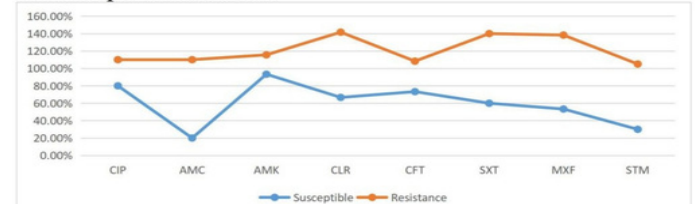
S. aureus: Highly susceptible to ciprofloxacin (80%), levofloxacin (80%), amikacin (93.3%); resistant to streptomycin (73.3%) and amoxicillin (93.3%).

P. aeruginosa: Susceptible to ciprofloxacin (90%), clarithromycin (85%); resistant to amoxicillin (95%), amikacin (90%), streptomycin (90%).

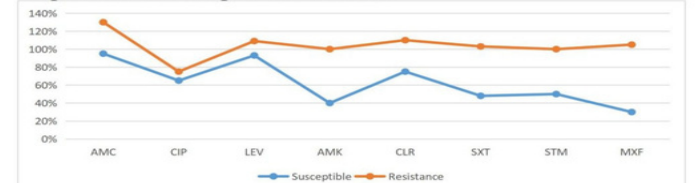
Streptococci: Susceptible to levofloxacin (90%), clarithromycin (75%); resistant to moxifloxacin (60%) and amikacin (60%).

E. coli: Susceptible to ciprofloxacin (90%), clarithromycin (90%); resistant to amikacin (90%), amoxicillin (95%), sulfamethoxazole (50%), streptomycin (90%).

Percent frequency distribution of resistance and susceptible *S. aureus* towards a panel of antibiotics



Percent frequency distribution of resistant and susceptible of *streptococci* towards a panel of antibiotics



Conclusion

S. aureus was the predominant pathogen isolated from breast abscesses in both lactational and non-lactational women. Age and gender had little or no effect on susceptibility to breast abscess.

Continuous screening and surveillance of breast abscess patients are recommended to prevent serious infections. Similar studies should be conducted in other healthcare facilities to provide a comprehensive understanding of the pathogens causing breast abscess in the region.

Keywords

Breast Abscess, *Staphylococcus aureus*, Antibiotic Resistance, Ciprofloxacin, Kirby-Bauer Method