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**Microbial spectrum and drug resistance profile in solid malignancies at a referral hospital in Palestine**

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## **Abstract**

### **Introduction:**

Infections are common in patients with underlying solid tumors. In contrary to hematologic malignancies, there are a variety of risk factors. Since the available data for blood stream infections in solid malignancy tumors are somewhat limited, prevention of infection before occurrence, controlling it when occurs, and antimicrobial stewardship are important manners in the whole therapy of solid tumor patients which is becoming challenging with the evolving of more antimicrobial drug resistant pathogens.

### **Aims of the study:**

Our study aims to assess the microbial spectrum and antimicrobial sensitivity and the overall outcome in relation to many clinical risk factors in solid tumor patients who were seeking care at a referral hospital in Palestine.

### **Methodology:**

From the onset of 2018 to the end of 2020, a total of 116 episodes with positive blood cultures in 96 patients having solid tumors at a referral hospital in Palestine were retrospectively studied and analyzed.

### **Results:**

We identified 116 positive blood cultures in 96 patients with a male to female ratio of 1:1. Mean age was 58.25. The most frequent recorded tumor was breast cancer (13.5%), followed by urinary tract tumors (10.4%). The most common source for episodes with positive blood culture was catheter related. Gram-positive bacteria accounted for 52.6% of the blood cultures with the predomination of *Staphylococcus* species. Whereas gram-negative bacteria were documented in 39.7% of cultures with *Escherichia coli* being the most frequent bacteria. Regarding fungi which they were only *Candida species*, it was isolated in 15.5% of cultures. 28.4% of patients were started on a single antimicrobial as an initial regimen, the remaining started on combination antimicrobial therapy. The most frequent initial antimicrobials used were aminoglycosides in 29.3% of episodes. All *Staphylococcus species* were sensitive to vancomycin. *Enterococcus species* were fully resistant to ciprofloxacin. In the case of *Escherichia coli*, the isolates were 100% sensitive to imipenem, meropenem, and amikacin and were mostly resistant to ampicillin in which the sensitivity was only about (19.5%). *Pseudomonas aeruginosa* were sensitive in 83.3% of cultures to both piperacillin-tazobactam and gentamycin but highly resistant to imipenem in which sensitivity declined to (50%). *Klebsiella species* isolates were 72.2% sensitive to gentamycin, meropenem, and imipenem and was 100% resistance to ampicillin. *Acinetobacter baumannii* was 50% sensitive to cotrimoxazole. *Candida species* showed high sensitivity to both caspofungin and flucytosine (83.3%), followed by (77.8%) sensitivity to voriconazole. Death was reported in 27.6% of episodes. There was a significant relationship between shock at presentation and death ( $p$  value=0.010).

### **Conclusion**

It has been identified that patients with solid malignancy are at significant risk of exhibiting BSIs, which may lead to poor outcome especially when dealing with microbes that resist multiple antimicrobials. Stewardship programs which dig deep before using any type of antimicrobials will help in decreasing the risk of resistance to antibiotics and implementing infection control surveillance plays a major role in decreasing the risk of contamination.

**Keywords:** Antimicrobial resistance, solid tumors, infection

