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ELEVENTH ANNUAL MEETING

Rapid Detection of Blood Stream pathogens in Acute Myeloid Leukemia (AML).

Amal Mohammed Hosni [1], Marwa Mohammed Mohammed Tolba[1], Hanan Harith Abd Elateef [1], Mohamed Zakaria Abo krisha [1], **Mai Mostafa Aly** [2].
[1] Clinical Pathology Department, Faculty of Medicine, Assiut University, Assiut, Egypt.
[2] Clinical Hematology Unit, Internal Medicine Department, Faculty of Medicine, Assiut University, Assiut, Egypt.

INTRODUCTION

Blood stream infections (BSI) are major complication in AML especially in neutropenic phase. Early diagnosis and pathogen identification is lifesaving, although blood culture is the gold standard, recent techniques developed namely VITEK2 automated microbial identification system that utilizing growth-based technology and Biofire multiplex PCR.

AIM

The aim is to identify bacterial and fungal species causing BSI in AML, detect the sensitive antimicrobial agent to each pathogen and compare manual blood culture to VITEK2 and Biofire multiplex PCR.

METHODS

A hospital based descriptive cross-sectional study included 215 AML patients that developed fever while receiving chemotherapeutic protocols.

RESULTS

The median age of the included cohort is 30 years (18-79) and 55.3% (n=119) male patients. Newly diagnosed AML cases were (n=167, 77.7%) while (n=48; 22.3%) were relapsed AML.

Almost half received 3&7 protocol (n=124;57.7%), ATRA & Adriamycin (n=16;7%), HIDAC (n=61; 28.4%) and low dose aracytine (n=14; 6.5%).Central venous catheters were used in 75% (n=162). Peripheral hemogram of the included cases showed median (range) WBC 0.7x10^9/L (0.05-254), ANC 0.1x10^9/L (0.01-9), hemoglobin 8.7g/dl (4.4-14.8), platelet 19x10^9/L (4-205), blast cells 0% (0-95) and CRP 45 (8-232mg/dl).

Notably 40% (n=86) of the included cases started antimicrobial primary prophylaxis (Ciprofloxacin, Amoxicillin+ Clavulanic acid ,Fluconazole and Acyclovir) with chemotherapy administration due to extreme neutropenia (ANC < 0.5x10^9/L) in addition to 26% (n=56) patients had secondary prophylaxis (Tazobactam, Amikacin , Fluconazole and Acyclovir). Median day of fever start was day 7 (range 1-55) from start of chemotherapy (day of sampling).

Figure 1: Percentage of patients with positive cultures

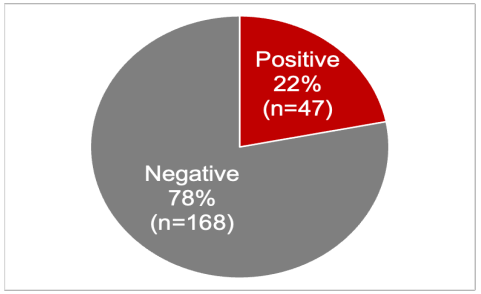


Figure 2:Causative organism of BSI

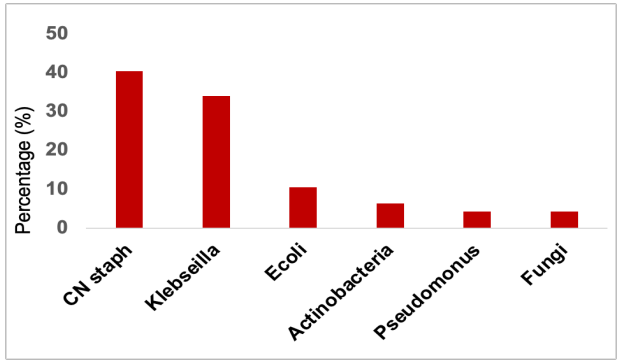


Figure 3: Patients with positive BSI in each technique

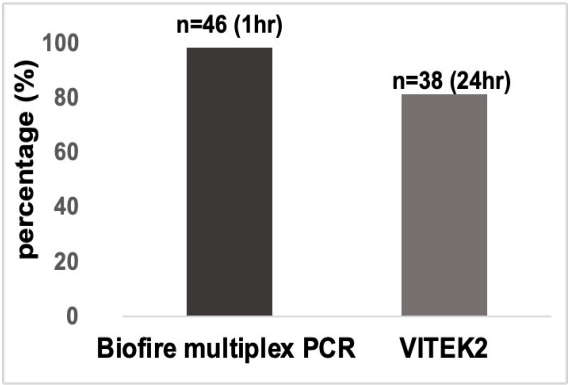
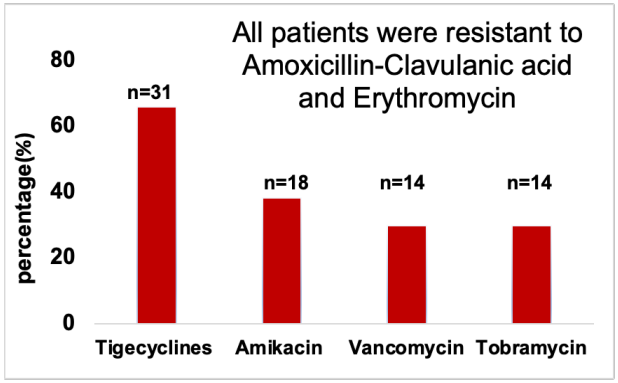


Figure 4: Sensitive antibacterial agents.



CONCLUSION

In conclusion Biofire multiplex PCR provide rapid and accurate identification of blood stream pathogens in AML while VTEK1 provides comprehensive identification of antibiotic sensitivity.

REREFRENCES

SZYMANKIEWICZ M , NAKONOWSKA B, et al. 2018 , Rapid Detection of Bloodstream Pathogens in Oncologic Patients with a FilmArray Multiplex PCR Assay: a Comparison with Culture Methods. Polish Journal of Microbiology, Vol. 67, No 1, 103–107.

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