Detection of HCV RNA by PCR in peripheral blood mononuclear cells as a predictor of relapse after antiviral therapy in Egyptian patients with chronic hepatitis C genotype 4


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Background: Although hepatitis C virus is mainly hepatotropic, it infects peripheral blood mononuclear cells (PBMCs) using them as a reservoir. HCV replication in PBMCs is suggested to influence the sustained virological response (SVR) of such patients.

Aim of work: HCV RNA Detection by real time PCR in PBMCs of chronic HCV patients after antiviral therapy compared to that in serum and if it is predicting relapse.

Methods: Fifty-three chronic HCV genotype 4 infected patients were selected from hepatology unit, Ain Shams University Hospitals, Egypt. All patients completed 12 weeks treatment with directly acting antivirals (sofosbuvir, daclatasvir ± ribavirin). Peripheral blood samples were obtained from the patients immediately after completing their treatment, 12 weeks and 1 year later. Real time PCR was used to detect positive and negative strands of HCV-RNA in PBMCs at the end of treatment. Real time PCR was used to detect serum HCV RNA at the end of treatment, 12 weeks and 1 year later.

Results: By the end of the treatment, the 53 subjects achieved undetectable serum RT-PCR for HCV-RNA. Eleven subjects had detectable HCV-RNA in PBMC. Twelve weeks after completion of treatment, all 53 subjects showed negative serum RT-PCR for HCV-RNA. However, one year later, six subjects of those who showed positive HCV-RNA in PBMC showed positive RT-PCR for HCV-RNA in serum. The rest of the 53 subjects sustained their response.

Conclusion: Positive HCV RNA in PBMCs at the end of treatment might play a key role in predicting relapse.

Detection of methicillin resistant Staphylococcus aureus, vancomycin intermediate susceptibility and vancomycin resistance among Staphylococcus aureus isolated from tertiary care hospital

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Background: Staphylococcus aureus resistant to methicillin is one of the major causes of hospital acquired infections. Vancomycin is considered the first-line treatment options for severe infections caused by MRSA. A vancomycin minimal inhibitory concentration (MIC) creep phenomenon was detected due to increase in MIC of vancomycin susceptible MRSA strains. Elevated vancomycin MICs in MRSA are associated with a risk of vancomycin resistance and treatment failure which may lead to increased morbidity and mortality rates.

Aim of study: The aim of this study was to detect MRSA, VISA and VRSA among Staphylococcus aureus isolates from neonates admitted to neonatal I.C.U. of Egypt Children’s hospital for health insurance.

Methodology: A total of 91 Staphylococcus aureus isolates were collected over nine months from June 2016 to February 2017. The isolates were recovered from different clinical samples of neonates; blood (n = 51), Pus (n = 20) and wound swab (n = 20). The isolates were tested for methicillin resistance by using the cefoxitin disc diffusion test (30 µg) and then the MIC of vancomycin was determined by using E-test for MRSA isolates.

Results: 77 isolates (84.6%) were MRSA by cefoxitin disc. The MIC range of vancomycin was 0.38-4 µg/mL. Two MRSA isolates (2.6%) were simultaneously susceptible to vancomycin (VISA) with MIC 4 µg/mL. No vancomycin resistance was detected among MRSA isolates.

Conclusion: We conclude that MRSA isolates were frequently isolated from NICU and the MIC of vancomycin was increased but without development of vancomycin resistance.

Earliest accurate timing for performing identification and antimicrobial susceptibility testing, impact of matrix-assisted laser desorption ionization time-of-flight mass spectrometry

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Background: Final identification and susceptibility Results of positive blood cultures would take up to 72 hours by conventional Methods. Every hour of early treatment, could be life-saving for septic immunocompromised patients. Recently, using rapid diagnostic tests e.g. matrix-assisted laser desorption ionization time-of-flight mass spectrometry (MALDI-TOF MS) has proved to shorten the turnaround time for positive cultures.

Aim: We conducted a pilot study to determine the earliest timing for accurate identification of causative pathogens using MALDI-TOF MS and for performing antimicrobial susceptibility testing (AST) of microorganisms isolated from positive blood culture bottles.

Materials and Methods: The study was conducted at microbiology lab of the Children’s Cancer Hospital Egypt (CCH). A rapid diagnostic protocol was assumed, after initial bacterial growth, the Identification was done using MALDI-TOF MS followed by immediate AST by automated Vitek 2. For validation of the rapid protocol a conventional protocol after over-night incubation was done. Positive blood culture samples were inoculated onto blood agar plates at 37°C. Identification was done at time-points 3, 6, 8, 10 12 and 24 h incubation by both automated Vitek 2 ID cards and MALDI-TOF MS. The best identification Results were followed by antimicrobial susceptibility testing (AST) Vitek 2 system and the 24 h incubated isolates were also tested for AST. A total of 600 ID and MIC testing were done (13 Gram positive isolates and 12 Gram negative isolates). The agreement between the AST Results for both protocols was analyzed.

Results: Identification of all isolates showed 100% agreement between testing initial 3-hour growth and testing over-night growth. The AST showed 100% agreement when testing at mean hours of 5.6 (SD ± 2.5) and 9 (SD ± 2.5) for Gram negative