Abstract:

OBJECTIVES: This study aimed to assess the microbial contamination rate of injectable lipid emulsion (ILE) repackaged syringes at 12 and 24 hours of their infusion time. Probable risk factors associated with contamination of the ILEs were also assessed. In addition, the antimicrobial resistance pattern of the bacterial isolates was also determined.

METHODS: Samples of ILE were collected from 152 repackaged syringes and their infusion lines after 12 hours and 24 hours of infusion time (73 and 79 samples, respectively). Samples were cultured, the isolates were identified, and the antimicrobial resistance pattern of the bacterial isolates was identified. A checklist was completed throughout the study to observe the compliance to infection control measures by pharmacists (who prepare) and nurses (who administer) the ILE infusions. Results of septic neonatal cultures were taken from records.

RESULTS: Microbial contamination was found in 15.8% of ILE samples. The 2 most common pathogens found among positive samples were Klebsiella pneumoniae (29.2%) and Candida albicans (20.8%). Microbial contamination of repackaged syringes increased from 9.6% at 12 hours to 21.5% at 24 hours. This difference was found to be statistically significant ($p = 0.044$). A similar trend of predominance of those 2 pathogens, in both ILE and neonatal cultures, was observed. There was a statistically significant better performance of infection control measures of pharmacists rather than nurses. The K pneumoniae isolates ($n = 7$) showed antibiotic resistance in the following pattern: gentamicin (71.4%), cefazolin (85.7%), and cefoxitin (85.7%).

CONCLUSIONS: The rate of ILE contamination was less at 12 hours' than at 24 hours' infusion time. However, contamination rates at 12 hours were unacceptably high. Klebisella pneumoniae and C albicans were the most common pathogens isolated from ILE. Compliance with infection control measures was significantly worse among nurses compared with pharmacists.

Reference:

Omran, E.A., Eisa, F.F. and Bakr, W.M.K. (2020) Microbial Contamination of Neonatal Injectable Lipid Emulsions at 12 and 24 Hours' Infusion Time With Evaluation of Infection Control Measures. The Journal of Pediatric Pharmacology and Therapeutics. 25(1), p.53-60. doi: 10.5863/1551-6776-25.1.53.