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OP 19

Analysis of accidental occupational exposure injuries among health care workers in a tertiary care center, Sri Lanka

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Background: Accidental needle stick injuries, cuts, or splashes into mucous membrane (exposure injuries) in the hospital carry the risk of infection by blood borne viruses. Incidents should be reported to the infection control team for proper management.

Objectives: To analyse the types of exposure injuries (EI) among health care workers (HCW) and the occurrence of EI among different categories of HCW.

Methods: All reported EI among HCW were analysed since January 2015 to August 2017 at a tertiary care center, Sri Lanka. Thorough risk assessment including the nature of the injury, source, circumstances and victims' immunity for hepatitis B virus (HBV) was done in each incident through a checklist derived reporting and managed accordingly. Extended awareness programmes were conducted for all categories of HCW on preventive measures in 2016.

Results: There were 388 reported cases of different types of EI among HCW during the period. Nurses (110) and nursing students (110) reported the highest number of incidents (28.5% each). Number of doctors, minor employees (ME) and other categories were 96 (25%), 55 (14%), and 15 (4%) respectively. The number of victims among students (12 in 2017) and ME (11 in 2017) reduced significantly following awareness programmes. Most incidents were due to incorrect sharps discard (101, 26%). Accidents, cuts, blood drawing and blood sugar testing caused EI to 79 (20%), 42 (11%), 39 (10%), and 28 (7%) respectively. Injuries due to re-capping needles was 27 (7%) and reduced by 2017 (n=6). A total of 244 (63%) were fully vaccinated against HBV and percentage of vaccines among victims increased yearly (53%, 62%, 79% respectively) while 75 were never vaccinated. Post exposure prophylaxis (PEP) for HIV was started in 8 HCW who were at risk following EI.

Conclusions: Among the HCW, nurses and nursing students reported the highest number of EI. Awareness programmes on correct handling of sharps may be effective in prevention. All HCW should be vaccinated for HBV.

OP 20

Iron oxide (Fe_3O_4) magnetic nanoparticles coated with *Garcinia cambogia* aqueous extract: A potential antibiofilm agent

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Background: Bacterial biofilms are difficult to treat with conventional antibiotics. Nanoparticles are regarded as a novel defence against drug-resistant biofilms.

Objectives: This study was conducted to evaluate antibiofilm activity of iron oxide (Fe_3O_4) nanoparticles against selected gram positive and gram negative bacterial biofilms.

Methods: Fe_3O_4 nanoparticles were prepared by co-precipitation method followed by polyethylene glycol-200(PEG-200) surface modification. Aqueous extract of *Garcinia cambogia* was coated on

observed between group-B and functionalized nanoparticles, whereas group-A showed a significant reduction in absorption compared with group-B.

Conclusions: rLigA-functionalized silver nanoparticles can be used to detect anti-leptospiral antibodies in human sera using UV-Vis spectroscopy.

OP 22

Green synthesized silver nanoparticles as a potential anti-biofilm agent

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Background: Treatment of chronic biofilm-related infections associated with medical devices and wounds is a challenge due to their antibiotic resistance and difficulty in penetration. Silver nanoparticles (AgNPs) can penetrate biofilms due to their small size and interruption of the quorum sensing mechanism. Biosynthesis of AgNPs is beneficial as renewable resources can be used avoiding expensive techniques.

Objectives: The aim was to biosynthesize AgNPs using bacteria and to determine their anti-biofilm activity against selected clinically important biofilms *in vitro*.

Methods: *Pseudomonas aeruginosa* ATCC 27853, *Escherichia coli* ATCC 25922, *Acinetobacter baumannii* (clinical strain), *Staphylococcus aureus* ATCC 25923 were cultured in nutrient broth. After 72h of incubation, AgNO₃ was added into the culture supernatant. AgNP formation was confirmed by UV-Visible spectroscopy. Anti-biofilm activity of different concentrations of the synthesized AgNPs was assessed using Crystal Violet assay after 24h and 48h exposure against 48h old *P. aeruginosa* ATCC 27853, *S. aureus* ATCC 25923 and *Candida albicans* ATCC 10231 biofilms formed under static conditions *in vitro*. The architecture of biofilms and morphological changes before and after AgNP exposure were studied using Scanning Electron Microscopy (SEM).

Results: All the selected bacteria produced AgNPs under optimized conditions where characteristic UV-Visible spectral peaks were observed indicating the presence of AgNPs. AgNPs synthesized by all bacteria except *S. aureus* mediated AgNPs displayed 50% biofilm inhibition at AgNP concentrations between 1.98-0.225 mg/mL. *S. aureus* mediated AgNPs showed 50% biofilm inhibition only against *S. aureus* biofilm. SEM images indicated that biosynthesized AgNPs reduced viable biofilm cells and the extracellular matrix causing morphological changes in biofilms noticeably. *Candida* cells showed rough outer cell walls and markedly reduced pseudohyphae.

Conclusions: Green AgNPs produced by each bacterium show anti-biofilm activity against the selected biofilms indicating that the bacteria-mediated AgNPs have a potential as anti-biofilm agents.

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OP 23

Clinical teachers' perceptions on an integrated medical curriculum and its role in promoting a holistic approach in patient care

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Background: An interesting part of medicine is when a patient presents with complex of symptoms which requires differential diagnosis prior to reaching a final diagnosis. Patients tend to be more