

Bacteriology 2019: Prevalence, Risk Factors and Bacterial Susceptibility of Surgical Site Infections following Abdominal Surgeries at Kampala International University Teaching Hospital, Uganda- Ariho Samuel Bona, Lule Herman- Kampala International University Teaching Hospital

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Background: Surgical site infection (SSIs) is a global burden that contributes towards morbidity and mortality of patients undergoing abdominal surgeries. There is paucity of data on SSIs in resource constrained Uganda to guide antibiotic protocols. The literature was from different publications including BMC, PubMed.

Methodology: Cross-sectional study involving culture and sensitivity of pus swabs from surgical sites of consented consecutive patients. Laboratory tests like PCR, API20E, use of Chromagar were performed at the United States Army Research Laboratory on Infectious Diseases (USAMRIID) and Microbiology Lab. at KIUTH. Data was analyzed using SPSS 20.0. Chi-square and binary logistic regression analyses were performed at 95% confidence interval, regarding $p < 0.05$ as significant to determine risk factors for SSIs. Ethical Clearance was obtained from Mbarara University Science and Technology Ethical review committee (IRB N0. 02/01-17).

Bacterial Biochemistry

Cellular mechanical residences play an critical position in bacterial survival and adaptation. The bacteria has nucleoids instead of nuclei. Bacteria is also used in the fields of biotechnology and gene therapy due to their possession of circular DNA called plasmids, in which it contain the genes that encode antibiotic resistance. The bacterial cellular wall is made up of peptidoglycan and cell wall of bacteria contains 2 categorie; Gram-positive and Gram-negative as they were named after the gram strain test. And it's far discovered in tissue of different organisms, soils, or water surfaces. It has unique structural characteristics along with a cellular envelope, ribosomes, nucleoid, pili, and flagella. Bacteria is likewise used in the fields of biotechnology and gene remedy due to their ownership of circular DNA referred to as plasmids, in which it comprise the genes that encode antibiotic resistance. The primary

and metabolic highlights about some of those are obscure. Numerous microscopic organisms are in cooperative relationship with eukaryotes and are in this way of worry in remedy and agriculture. Proteobacteria and cyanobacteria are the maximum important phyla in global biology and human issues. The cell divider in microbes fills in as a bodily boundary among the mobile and its surroundings. The inflexibility of the cell is due to Peptidoglycan layer which works as a cellular dividers of microorganisms, as eukaryotic cellular dividers are for the most organisms made up of chitin or cellulose ,and archaea bacteria have cell walls composed of different polysaccharides and proteins. Bacteriology and Infectious Diseases rely on exam of Bacterial Ecology, Bacterial Infection, Pathogenic Bacteria, Bacterial pollutants, Bacterial genomics, Salmonella, Bacterial Diseases, immunology, bacteriology, mycology, virology, parasitology, Parasitic Worms, Anthrax, Biological guns, Leprosy, pathology, and pathophysiology of the causative experts of infectious illnesses. It likewise, to offer bits of know-how into till now unexplored domain names of medical microbiology and infectious sicknesses, as an example, development of multi-medicate safety (MDR), advancement of novel antibodies and anti-pollutants to neutralize the impacts of MDR, type of contamination and illness dissemination mapping. It additionally presents novel discoveries at the ecology, biochemistry and genetics of pathogenic the, viruses, fungus and different infectious parasites. Contemporary findings bearing on the development of exceedingly advanced diagnostic and therapeutic methods towards infectious illnesses viz. Malaria, influenza, tuberculosis, leprosy, whooping cough, polio, Hepatitis-A, HIV/AIDS. Medical analysis is the process of determining which disease or circumstance explains someone's signs and symptoms and signs. Laboratory exams may additionally perceive organisms immediately (e.g., visually, the use of a microscope growing the organism in tradition) or indirectly (e.g., figuring out antibodies

to the organism). General sorts of checks encompass microscopy, tradition and immunologic assessments (agglutination exams which include latex agglutination, enzyme immunoassays, western blot, precipitation exams and complement fixation tests) and nucleic acid/ non-nucleic acid-based totally identification techniques. Subtypes of diagnoses include medical, laboratory, radiology, important and admitting diagnosis. Advanced strategies had been applied to diagnose the contamination in any a part of the body. Examples include biomarkers/ Elisa check/ chest x-ray/ skin biopsy/ tympanometry and tympanocentesis. Disease control is the subject worried about averting nosocomial or healthcare coverage related contamination, a practical (as opposed to scholarly) sub-train of the look at of sickness transmission. Infectious diseases avoidance and manage is beneficial to hold the transmission of infectious illnesses. Aseptic method is usually related to hold the sicknesses because of various manner. Disinfection is any other system of killing microorganisms via the applying warmth. Sanitization is the manner towards killing negative microorganisms. Some infectious illnesses can be counteracted by way of staying far from coordinate contact with the infectious character. Contaminations also can be controlled and averted via making public cognizance on diverse illnesses and their reasons. Diseases may be cured by distinct antimicrobials

Results: Of the 138 patients, 17.4% (n=24) developed SSIs. The risk factors for SSIs were comorbidity with diabetes mellitus (29.2%), cancer without enrollment for anti-cancer treatment (25%), pre-operative white blood cell count $>11.0 \times 10^9$ cells/L (50%), and HB <14.0 g/dl (75%), American Society of Anesthesiologists (ASA) score \geq II (91.6%), surgery involving entry into the peritoneum. The bacteria responsible for SSIs were *P. aeruginosa* (33.3%) followed by *E.coli* (25%), *S.aureus* (12.5%), Methicillin Resistant *S.aureus* (8.3%), *K. pneumoniae* (8.3%) and *Proteus* species (4.2%) in that order. These isolates demonstrated multiple drug resistance to commonly used antibiotics.

Conclusion(s): The prevalence of SSIs in the present study was higher than previously reported. Diabates,

cancer, anaemia, high ASA score, intra-peritoneal surgery and clean contaminated wounds were major risks. *P. aeruginosa*, *E.coli*, *S. aureus*, MRSA, and *K. pneumoniae* were the leading cause of SSIs. These bacteria demonstrated multiple drug resistance. There is need to prevent SSIs with more emphasis on control of pre-operative comorbidities. These findings are valuable to guide antibiotics prescription protocols amongst surgical patients in our setting. Further studies should be tailored towards understanding the molecular basis underlying such multiple drug resistance.