



Pathology Biology Section – 2010

G23 Occurrence of MRSA in the Peritoneal Cavity Following PEG Tube Insertion

Nicole Singer, BS*, 206 South 13th Street Apartment 702, Philadelphia, PA 19107; and Fredric N. Hellman, MD, Office of the Medical Examiner, Fair Acres, Route 352, Lima, PA 19037

After attending this presentation, attendees will become familiar with the means of transmission of methicillin-resistant staphylococcus aureus (MRSA) to the peritoneal cavity, proper percutaneous endoscopic gastrostomy (PEG) tube insertion procedures, and potential pitfalls, peritonitis, and a situation that links all previously mentioned aspects.

This presentation will impact the forensic science community by explaining that the occurrence of MRSA as an isolate in bacterial peritonitis does not increase the significant mortality for the patient to a greater extent than from mixed aerobic gram negative organisms or from anaerobic infection. It is nonetheless important for the forensic pathologist to appreciate the potential for nosocomial spread of MRSA to both the respiratory tract as well as into the peritoneal cavity, with the skin often colonized by MRSA when internal isolates of this microorganism are detected. Proper understanding of the mode of transmission will hopefully facilitate the development of guidelines to help prevent peritoneal nosocomial spread of Methicillin-resistant Staphylococcus aureus.

This presentation will examine the transition of MRSA as a skin commensal both to the respiratory tract of an immunologically compromised individual as well as to the peritoneal cavity following the insertion of a percutaneous endoscopic gastrostomy tube. This is the case of a 46-year-old white male who had a history of severe mental retardation/Down Syndrome and upper respiratory problems including dysphagia, being discharged from a regional hospital on January 20, 2009 after having a percutaneous endoscopic gastrostomy tube inserted for feeding. Upon returning to his place of residence, he suffered respiratory arrest, with resuscitative efforts to no avail. The decedent was pronounced dead at 9:15 p.m. on January 20, 2009, only several hours after being discharged from the hospital. Autopsy examination demonstrated a peritonitis that tested positive for Methicillin-resistant Staphylococcus aureus, with an excess of 300 ml of purulent tan fluid within the peritoneal cavity as well as coating visceral surfaces, and with fibrinous adhesions extending between bowel loops. Present as well was a gastrostomy tube inserted within the pyloric region of the stomach that readily slipped out of the insertion point upon removal of the viscera from the abdominal cavity. Other significant findings included chronic pancreatitis, with an extensively sclerotic pancreas, cortical contusions of the inferior orbital gyri of the left cerebral hemisphere, and extensive fenestrations of all aortic valve cusps, with extensive epicardial scarring of the surface of the heart. The cause of death was determined to be acute pneumonitis, with aspiration complicated by Methicillin-resistant Staphylococcus aureus-positive acute peritonitis, with significant contributing factors being inanition and dehydration, history of severe mental retardation/Down Syndrome, dysphagia, and chronic pancreatitis. The manner of death was rendered undetermined. Percutaneous endoscopic gastrostomy tubes are used to provide long term hydration and nutrition to patients who are no longer capable of receiving nutrition through oral means. Infections such as peritonitis may arise upon gastrointestinal perforation, but may also develop after percutaneous placement of gastrostomy feeding tubes in patients afflicted with commensal skin involvement by pathogenic bacteria. Typical bacteria cultured from the peritoneal cavity in circumstances of gastrointestinal perforation (e.g., perforated diverticuli, gastric ulcerations, etc.) include mainly a mix of aerobic gram negative bacteria (primary) and anaerobes (secondary). Isolation of a pure culture of MRSA is no longer an uncommon event in cases of bacterial peritonitis, however, likely a consequence of percutaneous nosocomial transfer of these organisms. Prior MRSA infections in an individual increase the likelihood of developing future such events. The insertion of a PEG tube facilitates MRSA spread into the peritoneal cavity, presumably through nosocomial spread from the skin. Bacterial peritonitis is always a life-threatening event; MRSA as the source of bacterial peritonitis underscores both the ubiquity of this microorganism and the dangers associated with introduction of catheters into the peritoneal cavity within this context. The occurrence of MRSA as an isolate in bacterial peritonitis does not increase the significant mortality for the patient to a greater extent than from mixed aerobic gram negative organisms or from anaerobic infection. It is nonetheless important for the forensic pathologist to appreciate the potential for nosocomial spread of MRSA to both the respiratory tract as well as into the peritoneal cavity, with the skin often colonized by MRSA when internal isolates of this microorganism are detected. Proper understanding of the mode of transmission will hopefully facilitate the development of guidelines to help prevent peritoneal nosocomial spread of Methicillin-resistant Staphylococcus aureus.

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