

Microbial Detection of Bacteria in Autopsy Room

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Introduction

- Forensic medical practice is associated with higher risk of infection because the increasing of infectious disease-related death particularly in developing countries
- Indonesia is one of developing country which is still had infectious disease problem.

- A study conducted by Sorin Hostiuc et al (dimana?), using air sample in autopsy room, found some types of bacteria, including *Escherichia coli*, *Pseudomonas aeruginosa*, *Staphylococcus faecium*, *Yersinia enterocolitica*, *Enterobacter aerogenes*, *S. choleraesuis*, *Staphylococcus aureus*, *Staphylococcus epidermidis*, *Nisseria sp*, dan *Streptococcus Pneumonie*.
- While using cotton swab taken from main door of autopsy room, three autopsy tables, and two windows, they found gram-positive cocci bacteria, sometime in the form of dyplo or small chain.
- Hepatitis B virus and HIV were found almost 24 hours after autopsy on immunologic test

- The aim of this study is to determine the presence of pathogenic bacteria in the autopsy room of Dr. M Djamil Hospital Padang (Indonesia) and determine the extent of occupational risk in such scope.

Methods

- This was a descriptive study, conducted by detecting the bacteria in the air and swabbing some part of the mortuary, including door handle, cupboard handle, and autopsy table

- to identify air-transmitted bacteria, we put blood agar and MacConkey agar per 2 meters square of mortuary floor and then left open for 15 minutes.
- they were sent to microbiology laboratory to be incubated at 37°C for 18-24 hours.
- Bacterial identification was done by using Vitek® 2 system

Result

No.	Sample source	Name of Bacteria
1	Door handle	<i>Sphingomonas paucimobilis</i> <i>Micrococcus luteus</i> <i>Acinetobacter iwoffii</i> <i>Staphylococcus capitis</i>
2	Autopsy table	<i>Aeromonas salmonicida</i> <i>Acinetobacter baumannii</i> <i>Sphingomonas paucimobilis</i> <i>Acinetobacter iwoffii</i> <i>Kocuria kristinae</i>
3	Air	<i>Kocuria kristinae</i> <i>Pasteurella canis</i> <i>Bordetella bronchiseptica</i> <i>Acinetobacter iwoffii</i> <i>Dermacoccus nishinomiyaensis</i> <i>Staphylococcus saprophyticus</i> <i>Staphylococcus hominis</i>
4	Cupboard handle	Bacteria was not found

- The result of this study showed that *Acinetobacter baumannii* was found in one of the autopsy table which certainly has direct contact with corpse.
- *Acinetobacter baumannii* is a gram-negative basil bacteria whose characteristics are aerobic, pleomorphic, and non-motile

- This bacteria often becomes the cause of nosocomial infection in human.
- The colony of this bacteria can be found at infected human skin, respiratory tract, and oropharynx secretion.
- The incidence of *A. baumannii*-caused hospital-associated infection (HAI) is increased, therefore automatically increasing the risk of patient morbidity and mortality

- This bacteria was known to be able to colonizes in operating room, ward, delivery room, and burns management room in hospital.
- It also contribute in acute diseases, including meningitis, pneumonia, and bacteremia.
- Incidence of *A. baumannii* infection on immunocompromised patient is also high, particularly who undergo long time hospitalization

- Multi drug resistant could worsen patient outcome because of appropriate treatment delay, limitation of treatment choices, and higher toxicity of the available treatment.

- Most of other bacteria identified in this study are categorized as environmental bacteria.
- Those bacteria can still infect person with lowering immunity.
- *Sphingomonas paucimobilis* is distributed widely in natural environment. It can also contaminate water supply, hospital equipments and devices such as mechanical ventilator or catheter that will lead to nosocomial infection.

- *Micrococcus*, as a common gram-positive cocci bacteria, is considered as a dangerous saprophyte which is resident at human skin, mucosa, and oropharynx.
- However, it could be opportunistic pathogen in immunocompromised patient

- *Acinetobacter iwoffii* is a commensal organism at human skin, oropharynx, and perineum.
- There are some reports about *A. iwoffii* bacteremia.
- It is reported that there were 10 patients infected with *A. iwoffii* bacteremia in four years (2002-2005) who were hospitalized at a teaching hospital in Italy.
- All of them were immunocompromised patient, 8 of them used intravascular catheter and 2 of them used urinary catheter

- *Staphylococcus capitis*, *Staphylococcus saprophyticus* and *Staphylococcus hominis* are belong to *Coagulase negative staphylococcus* (CoNS) group, which is normal flora of human skin, anterior nares, and ear canal.
- However, despite its position as normal flora, utilization of intravascular device is more often over time and the number of immunocompromised patient hospitalization is increasing, CoNS has become the main cause of nosocomial blood infection.

- *Aeromonas salmonicida* is the main pathogen in fish pathology and these bacteria doesn't grow in human body because it cannot grow on 37°C temperature.
- However, nowadays this bacteria has been identified as primary pathogen on health person as well as immunocompromised person, particularly on gastrointestinal infection and septicemia

- *Kocuria kristinae* is not considered as primary pathogen, but for the last few years, there were some cases in patient's catheter caused by this species lead to peritoneal dialysis-related peritonitis and acute cholecystitis in chronic-ill patient and pregnant women (without other diseases history)

- *Bordetella bronchiseptica* is respiratory pathogen which has a strong relation with whooping cough caused by *Bordetella pertusis*.
- *Bordetella pertusis* can only infect human, while *B. bronchiseptica* can also infect many kinds of mammal, cause tracheobronchitis in dogs and cats, and atrophy rhinitis in pork.
- Human infection occurs mainly if immunocompromised person exposed by livestock infection

Conclusion

- *Acinetobacter baumannii*, as opportunistic pathogen bacteria which often become the cause of Hospital associated Infection, was found in mortuary environment.
- Air environment in mortuary contains environmental bacteria which can be the cause of infection, particularly in immunocompromised patient.

THANK YOU