

Pathogen bacteria identification jurnal

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Pathogen Bacteria Identification at Mortuary of Dr. M. Djamil Hospital Padang Indonesia

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ABSTRACT

Forensic medical practice is associated with higher risk of infection because the increasing of infectious disease-related death particularly in developing countries. It also become the source of nosocomial infection sources. This study aim to identify the type of pathogen bacteria that could be found at mortuary of Dr. M Djamil Hospital Padang. 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. This study found that *Acinetobacter baumannii* presence at one of the autopsy table. Therefore, we also found pathogen opportunistic bacteria at hospital mortuary which can be the source of infection in immunocompromised patient. Hence, a better preventive and infection control action is required to reduce the risk of infection.

Keywords : Infection, mortuary, autopsy, *Acinetobacter baumannii*

INTRODUCTION

The risk of infection for forensic medical practitioner at mortuary was reportedly increased.¹ This was due to increasing of infectious disease-related death particularly in developing countries.² Some studies showed higher prevalence of HIV, Hepatitis B, C, D, G, Tuberculosis, Prion Disease, Hantavirus, measles, bacterial infection or HTCV on workers at mortuary.¹ Indonesia is one of developing country which is still had infectious disease problem. In 2011, some of infectious disease epidemic including Hepatitis, avian influenza, and SARS was reported in Indonesia.²

Autopsy safety was not considered as an important thing until 1980's, when the first HIV case appeared. At first, it was emphasized on Infection preventive action by conducting universal vigilance and developing Occupational Safety and Health Administration(OSHA) regulation. In line with that, some regulations and procedures to minimize the probability of wound and needlestick injury were also enacted. Other hazards and their appropriate management was been identifying overtime.^{3,4}

Most of the work accidents are due to human negligence factor and low awareness of self protection. In autopsy safety regulation, everything has been arranged very well to prevent infection, starting from requirements of autopsy room, personal protective equipment, and procedure of autopsy room disinfection.^{3,4}

A study conducted by Sorin Hostiuc et al, 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.¹ This study has never been conducted in Indonesia, particularly at M Djamil Hospital Padang.

METHODS

In descriptive study, we swabbed the door handle of mortuary, door handle of cupboard in mortuary, and autopsy table, by using cotton swab. While 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. Subsequently, they were sent to microbiologic laboratory to be incubated at 37°C for 18-24 hours. Bacterial identification was done by using Vitek® 2 system.

RESULT

The result of bacterial identification at M Djamil hospital mortuary was presented in Table 1.

Table No. 1: Bacterial Identification Result

S. 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>Dermaococcus nishinomiyaensis</i> <i>Staphylococcus saprophyticus</i> <i>Staphylococcus hominis</i>
4	Cupboard handle	Bacteria was not found

DISCUSSION

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.⁵

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. *Sphingomonas paucimobilis* can cause many kinds of infection, including bacteremia, skeletal arthritis, osteomyelitis, meningitis, wound infection, urinary tract infection, intra-abdominal infection, ventilator-associated pneumonia, peritoneal dialysis-related peritonitis, and post-operation endophthalmitis.⁶

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.⁷

Acinetobacter iwoffi is a commensal organism at human skin, oropharynx, and perineum. There are some reports about *A. iwoffi* bacteremia. It is reported that there were 10 patients infected with *A. iwoffi* 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.⁸

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.⁷

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.⁹

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).¹⁰

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.^{11, 12}

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.

Ethical clearance: This study does not involve humans and animals. This study only took a swab on the surface of the autopsy room.

Source of funding: Research funding come from the medical faculties andalas university

Conflict of Interest: This research had permitted from M Djamil hospital Padang, Indonesia.

REREFERENCES

1. Sorin Hostiuc, George Chistian Curca, Mihai Ceaus. u, Mugurel Constantin Rusu, Elena Niculescu, Dan dermengiu. **Infectious Risks in Autopsy Practice. Romanian Journal Legal Medicine. 2011; (19): 183-188.**
2. **Komisi Penanggulangan AIDS. Tata Cara Pemulasaran Jenazah Orang dengan HIV dan AIDS. Jawa Tengah. 2012.**
3. **Charles V, Wetli. Autopsy Safety. Center of Forensic Sciences, Happaage and Departement of Pathology, State University. New York. Laboratory Medicine Volume 32 number 8, August 2001.**
4. **OSHA Compliance Guidelines for Funeral Home. Atlanta: Georgia Institute of technology.**
5. Lisa L Maragis, Trish M Perl. *Acinetobacter baumannii* : Epidemiology, Antimicrobial, Resistance and Treatment Options. *Clinical Infectious Diseases*.2008; 46 : 1254-1263.
6. I Ching Kuo et al. *Sphingomonas pucimobilis* bacteraemi and septic arthritis in a diabetic patient presenting with septic pulmonary emboli. *Journal of Medical Microbiology*.2009; 58, 1259-1263
7. NHS. *Identification of Staphylococcus species, Micrococcus species and Rothia species. Bacteriology- Identification*.2014.
8. Sofia Constantiniu, Angela Romaniuc, Luminita Smaranda Iancu, Raluca Filimon, Iuliana Tarasi.

- Cultural and Biochemical Characteristics of Acetobacter Spp Strains Isolated from Hospital Units. *The Journal of Preventif Medicine*.2004; 12 (3-4):35-42
10. Rachna Tewari, Mridu Dudeja, Shyamasree Nandy, Ayan Kumar Das. Isolation of Aeromonas salmonicida from Huan Blood Sample :A Case Report. *Journalof Clinical and Diagnostic Research*.2014 Feb;8(2): 139-140
 11. Rachna Tewari, Mridu Dudeja, Ayan K Das, Shyamasree nandy. Kocuria Kristinae in Catheter Associated Urinary Tract Infection : A Case Report. *Journal of Clinical and Diagnostic Research*. 2013 Aug; 7(8):1692-1693
 12. NHS. Identification of Pasteurella spesies and Morphologically Similar Organisms. *Bacterial-Identification*. 2015
 13. NHS. Identification of Bordetella spesies. *Bacteriology-Identification*.2015

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