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IDENTIFICATION OF Staphylococcus aureus IN PATIENTS DIABETIC ULCUS IN BUNDA THAMRIN HOSPITAL MEDAN

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ABSTRACT

Staphylococcus aureus can cause infection that usually presents with characteristic signs of inflammation, necrosis, and abscess formation. Staphylococcus aureus is responsible for 80% of suppurative diseases with the skin surface as its natural habitat. Skin infections and open wounds such as ulcers, burns, and surgical wounds increase the likelihood of bacterial infection and result in systemic infection. Identification of Staphylococcus aureus in diabetic ulcer patients was carried out at the Microbiology Laboratory of Bunda Thamrin Hospital Medan from February to March 2022 with a total sample of 6 people, this study is descriptive Experiment using isolation and identification methods. The results showed that of the 6 samples, 50% of the samples were contaminated with Staphylococcus aureus bacteria, 50% of the samples were contaminated with gram-negative rods. From the results of the study it can be concluded that Staphylococcus aureus is one of the bacteria that causes infection in diabetic ulcer patients. The results showed that of the 6 samples, 50% of the samples were contaminated with Staphylococcus aureus bacteria, 50% of the samples were contaminated with gram-negative rods. The results showed that of the 6 samples, 50% of the samples were contaminated with Staphylococcus aureus bacteria, 50% of the samples were contaminated with gram-negative rods. From the results of the study it can be concluded that Staphylococcus aureus is one of the bacteria that causes infection in diabetic ulcer patients.

Keyword: Staphylococcus aureus, Ulkus Diabetikum

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PRELIMINARY

Diabetes Mellitus (DM) is a metabolic disease in which a collection of symptoms arise in a person due to an increase in blood glucose levels above normal values. The increase in blood glucose levels is caused by a disturbance in insulin secretion, insulin action or both. Diabetes Mellitus is one of the global public health problems that continues to grow.[1]

North Sumatra Province has increased the number of people with Diabetes Mellitus every year. In 2018, the province of North Sumatra had a prevalence of Diabetes Mellitus of 2.6% and became one of the provinces with the highest prevalence of people with diabetes mellitus in Indonesia.[2]

Based on 2019 International Diabetes Federation (IDF) data, the International Diabetes Federation (IDF) Organization estimates that there are at least 436 million people aged 20-70 years in the world suffering from diabetes in 2019 or equivalent to a prevalence rate of 9.3% of the total population. at the same age. If classified by gender, IDF estimates that the prevalence of diabetes in 2019 is 9% in women and 9.65% in men.[3]

Diabetic ulcers are one of the chronic complications of Diabetes Mellitus in the form of open sores on the skin surface accompanied by tissue death. Diabetic ulcers on the feet are often the entry point for bacteria, including Gram-positive and Gram-negative aerobic bacteria. The common Gram negative bacteria that cause infection are Enterobacter sp (11.1%), Proteus sp (11.1%), Pseudomonas sp (16.6%), and the common Gram positive bacteria causing infection are Staphylococcus sp (27.8 %), and Streptococcus sp (16.6%).[4]

Staphylococcus aureus It can cause infection which usually presents with characteristic signs of inflammation, necrosis, and abscess formation. S. aureus is responsible for 80% of suppurative diseases with the skin surface as its natural habitat. Skin infections and open wounds such as ulcers, burns, and surgical wounds increase the likelihood of bacterial infection and result in systemic infection.[5]

RESEARCH METHODS

The type of research used is descriptive experimental research, This study will take samples from diabetic ulcer patients and identify them against S. aureus bacteria.

RESEARCH PLACE

Research is carried out in the laboratory Mother Thamrin Medan Hospital.

RESEARCH TIME

The time of the research was carried out in October-November 2022.

POPULATION

The population in this study were all patients with diabetic ulcers who were hospitalized at Bunda Thamrin Hospital, Medan in Bulan October-November 2022.

SAMPLE

The samples in this study were 6 samples which were the entire population of diabetic ulcer sufferers who were hospitalized at Bunda Thamrin Hospital, Medan.

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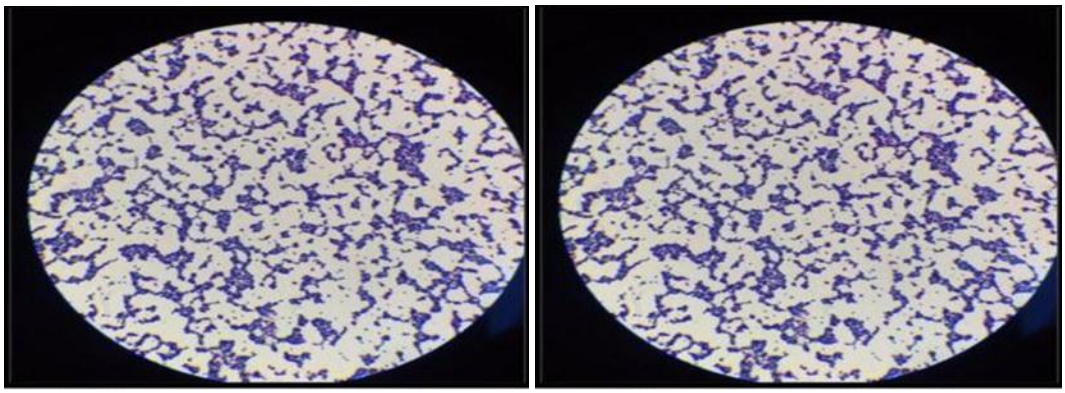
RESULTS AND DISCUSSION

Based on research that has been conducted on 6 samples of diabetic ulcer patients who were hospitalized at Bunda Thamrin Hospital Medan which were examined at the Microbiology Laboratory of Bunda Thamrin Hospital Medan, the following results were obtained:

Table 4.1 Gram Stain Results

No.	*Name (Code)*	*Gender (L/P)*	*Age*	*Coloring Results*
1	S1	L	65	Shape: Cocci cluster Purple Traits: Gram positive
2	S2	L	54	Shape: Rod Red Traits: Gram negative
3	S3	L	57	Shape: Rod Red Traits: Gram negative
4	S4	P	59	Shape: Coccus chain Purple Traits: Gram positive
5	S5	L	60	Shape: Cocci cluster Purple Traits: Gram positive
6	S6	P	67	Shape: Rod Red Traits: Gram negative

Source: Research Results at the Microbiology Laboratory of Bunda Thamrin Hospital Medan. 2022



Gram stain results from blood agar media

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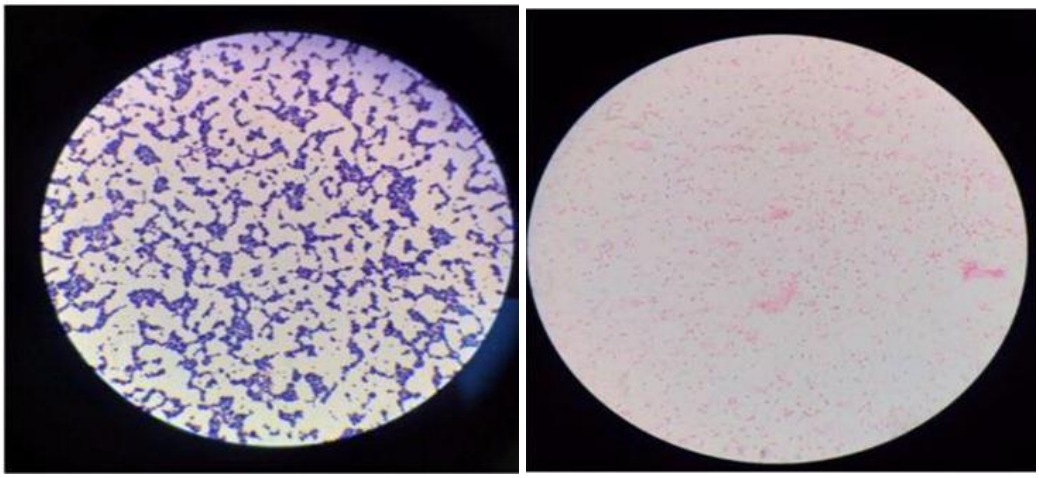

Coccus Gram Positive Coccus Gram negative Cocci

Based on table 4.1. From the above it can be seen that from the 6 samples of diabetic ulcers, 50% of the samples were contaminated with gram positive coccus bacteria (sample numbers 1,4 and 5) and 50% of the other samples were contaminated with gram negative bacteria (sample numbers 2,3 and 6). sample numbers 1,4 and 5 were planted on Blood Agar Media so that the following results were obtained:

Table 4.2 Culture Results on Blood Agar Media

NO.	Name (Code)	Gender (L/P)	Age	Breeding Results (Colony Growth)
1	S1	L	65	Round shape Color: Golden Yellow Traits: Hemolysis
4	S4	P	59	Round shape Color: Golden Yellow Traits: Hemolysis
5	S5	L	60	Round shape Color: Golden Yellow Traits: Hemolysis

Source: Research Results at the Microbiology Laboratory of Bunda Thamrin Hospital Medan. 2022

Furthermore, from the Blood Agar media, the reins (separate) colonies were taken and then gram staining was carried out and the following results were obtained:

Table 4.3 Results on Gram Stain with colonies growing on Blood Agar . Media

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NO.	Name (Code)	Type Sex (L/P)	Age	Observation result
1	S1	L	65	*Staphylococcus*gram positive
4	S4	P	59	*Staphylococcus*gram positive
5	S5	L	60	*Staphylococcus*gram positive

Source: Research Results at the Microbiology Laboratory of Bunda Thamrin Hospital Medan. 2022

To determine the gram-positive coccus bacteria, then from the Blood Agar media the reins (separate) colonies were taken and then the catalase test was carried out and the following results were obtained:

Table 4.4Results on Catalase Test

NO.	Name (Code)	Gender (L/P)	Age	Results
1	S1	L	65	+ (gas bubbles form)
4	S4	P	59	+ (gas bubbles form)
5	S5	L	60	+ (gas bubbles form)

Source: Research Results at the Microbiology Laboratory of Bunda Thamrin Hospital Medan. 2022

Based on table 4.4 the three sample results are positive and can beIt is known that the sample was contaminated by S. aureus bacteria.

*S. aureus*is a commensal organism on the skin surface, but in open skin conditions/wounds these bacteria will be pathogenic. The pathogenicity of S. aureus is because this bacterium produces toxins and enzymes that can cause tissue damage

Bacteria*Staphylococcus*most infect ulcers in diabetic patients. This is because the ulcer is open so bacteria can easily infect the wound. In addition, because patients suffering from diabetes have high glucose levels, it becomes a nutrient and habitat for bacteria to breed

The cause of the presence of S. aureus in diabetic ulcer patients can come from indoor air contaminated with S. aureus, transmission from patient to patient, from room facilities such as blankets or bed linen, not optimal sterilization of the room and the unavailability of isolation rooms for patients who are already sick. infected with S. aureus.

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