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Profile of Bacteria and Antibiotic Sensitivity Test in the Case of the Wound Infection Post Section Caesaria in RSUD Dr. Saiful Anwar Malang on January 2012-October 2016 Period

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Abstract: Wound infection after section Caesaria is one form of nosocomial infections. This study aimed to determine of chraracteristic the samples namely, the prevalence of post section Caesaria, profiles of bacterial infections and antibiotic sensitivity test in the Hospital Dr. Saiful Anwar Malang Indonesia in the period January 2012-October 2016. The study design was observational descriptive retrospective. The sampling method used in this study is total sampling taken from the medical record in the intervening period January 2012-October 2016. The results showed that the sample was 4.809. The study successfully revealed the characteristics of the study, namely, age, educatonal level, occupation, hospital sheed, indication, hospitalization time and leucocyte account. The prevalence of infection after section cecaria sample found as many as 15 people (2.16%) while non-infectious cases is as much as 4.794 (99.5%). Profile group of Gram-positive bacteria were found more than a Gram-negative group. Of the group Gram-positive bacteria most commonly found are coagulase negative *Staphylococcus* (40%). The group of Gram-negative are most commonly found is *Escherichia coli* and *Klebsiella pneumoniae* (13.33%), respectively. Most coagulase negative *Staphylococcus* sensitive to groups of aminoglycoside antibiotics (Amikacin and Netilmycin). As for *Escherichia coli* sensitive to Fosfomycin, Meropenem, Amoxicillin+Clavulanic group Piperacillin/Tazobactam.

Key words: Wound infection post section Caesaria, bacterial profile, antibiotic patterns, nosocomial infections, educatonal level, *Escherichia coli* and *Klebsiella pneumoniae*

INTRODUCTION

Caesaria section is a way of giving birth surgery through the abdominal wall (laparotomy). Request section Caesaria without a clear indication it causes a higher amount. In the USA found an increase section Caesaria which in 1996 was 20.7% in 2006 and 31.1%.

Data an increase Cesaria section cases in Indonesia began in 2003. There were cases of 46.87% in 2004 rose to 53.2% in 2005 to 51.59% in 2006 to 53.68% (Grace and Borley, 2007). Results of national survey in 2009 showed as many as 921,000 births (22.8%) performed with section Caesaria which is part of the 4.0390,000 births. The number of cases section Caesaria in government hospitals in 2006 is approximately 20-25% of the total number of deliveries. While in private hospitals the number is as high as 30-80% of the total number of births (Depkes, 2006). The largest hospital Dr Soetomo's in East Java, Caesaria section cases in 2008 was 1.478 (23.3%) with the total number of births as much as 6.335.6. In addition, based on annual reports Hospital Dr. Saiful Anwar Malang which is smaller than the city of Surabaya in 2012 found as many as 1618 deliveries were performed with Caesaria (Anonymous, 2006).

The mortality rate of Caesaria section is 5.8/100.000 success birth while the morbidity rate is 27.3% compared to normal childbirth which is 9/1000 cases. WHO (World Health Organization) suggest that the number of section Caesaria only 10-15% from the total childbirth. WHO suggestion is based on risks analysis that may occurs because of section Caesaria. National Health Service NHS in 2013 said from 2.552 women sample, 1.479 (58%) women giving birth normally. While as much as 1.073 (42%) giving birth by section Caesaria (565 was planned and 508 was not planned). According to, Healey (1997) and Hayati (2010), surgery on abdominal section is one of the risk factor that can cause wound infection.

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The wound infection post section Caesaria diagnosis should be based on whether or not the pus is presence on the wound. Bacteriologic check in form of smear with gram stain and culture is need to be done to know the bacteria that caused the infection and also to know the right treatment. The development of germ resistance to antibiotics is heavily on the intensity usage exposure usage of antibiotic in some region, the usage of antibiotic that out of control is likely to increase the resistance of a germ that is sensitive in the first place. Some surveys on prescription whether domestic or overseas, antibiotic betalaktam is the most antibiotic that being prescript, so, the germ already resistance to the antibiotic.

Most of antibiotic usage happens in hospital but not all of them have a program to observe the resistance of germ, control the infection, observe the antibiotic usage in hospital, making a new guide for the antibiotic usage and prophylaxis also monitoring the resistance test, so, it can be used to know the antibiotic that sill potent, safe and effective and produce the good clinical outcomes (Hayati, 2010).

In our study, it has been disclosed on matters relating to post infection section Cesarean reviewed from: karater sample, the prevalence of bacteria and test sensitivity to anti biotka. Expectations of the results of this study are to be input to reduce the number of cases, knowing the appropriate antibiotics used in wound infection after section Caesaria in Hospital Dr. Saiful Anwar Malang.

MATERIALS AND METHODS

This study is observational descriptive study in retrospective to know the profile of bacteria and antibiotic sensitivity test in the case of the wound infection post section Caesaria in RSUD Dr. Saiful Anwar Malang January on 2012-October 2016 period.

Sample used in this study is all medical record and the result of pus swab culture of the patient with wound infection post section Caesaria in RSUD Dr. Saiful Anwar Malang on January 2012-October 2016 in accordance with the criteria of inclusion and exclusion.

RESULTS AND DISCUSSION

Characteristic study sample: To meet the requirements of the characterization of the 24 samples was only 15. The results are shown in Table 1. Based on the data in the table found a group of non-productive age >35 years, 7 (46.67%) samples. The same percentage amount is found in the character education level samples is dominated by high school (bachelor), 7 (46.67%) samples. This type of work is mostly housewives as many as 10 people (66.66%). It is also known from clinical status showed that anemia was found in 6 (40%) samples. The same datas are found also in diabetes mellitus 4 (26.67%) samples. Most indicative of section Cesarean delivery is an emergency of the sample. As for as the cause is pre-eclampsia 4 (26.67%) samples, amniotic fluid is not normal in 2 (13.33%) samples and baby malpresentation 2 (13.33%). In addition, also known hospitalization time by Table 1, the longest was >3 days with a total of 13 people (86.67%) followed by 2-3 days by 2 people (13.33%). Furthermore, from this sample study of 11 samples (73.33%) showed leukocytes >11.3.

Table 1: Characteristics of the study sample

Characteristics	Frequency	Persentage
Age (years)		
<20	-	-
20-25	2	13.33
26-35	6	40
>35	7	46.67
Educational level		
Bachelor	1	6.67
Senior high school	7	46.67
Junior high school	6	40
Elementary school	1	6.67
Occupation		
Housewife	10	66.66
Private employee	4	26.67
Officer	1	6.67
Student	-	-
Hospital sheet		
Diabetes mellitus	4	26.67
Hypertension	2	13.33
Anemia	6	40
No. record	2	13.33
Other	1	6.67
Section Caesaria indication		
Fetal distress	2	13.33
Malpresentation	2	13.33
Fetal abnormalities	1	6.67
Severe pre-eclampsia	4	26.67
Narrow pelvic	1	6.67
Amniotic fluid abnormalities	2	13.33
Placental abnormalities	1	6.67
C-section record	1	6.67
Personal request (without indication)	1	6.67
Hospitalization time (days)		
<1	-	-
2-3	2	13.33
>3	13	86.67
Leukocyt amount		
$<4.7\times10^3/\mu L$	-	-
$4.7\text{-}11,3\times10^3/\mu L$	4	26.67
$>11.3\times10^3/\mu L$	11	73.33
Total	15	100

Based on Fig. 1, the total births by section Caesarea during the period January 2012 through October 2016 is 4.809 samples. Of the total sample of Cesarean section there were 24 (3.84%) samples of surgical wound infection. Each amount of infection after Caesarean section in the order that began in 2012 through 2016, respectively are: 0.25, 0.31, 0.93, 0.6 and 1.39%.

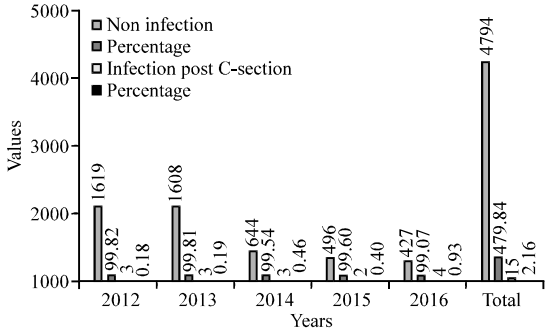

Fig. 1: Prevalences of infection and non infection samples section Cecarea

Table 2: Profile of bacteria isolated from post Cesarean section infection patient at Saiful Anwar Hospital in Malang Indonesia between 2012 until 2016 premises

Bacteria types	N = 15	Percentage
Gram positive bacteria		
Staphylococcus coagulase negative	6	40
Staphylococcus aureus	2	13.33
Streptococcus pneumoniae	2	13.33
Staphylococcus haemolyticus	1	6.67
Gram negative bacteria		
Eschericia coli	2	13.33
Klebsiella pneumoniae	2	13.33
Pseudomonas aeruginosa	1	6.67
Salmonella arizonae	1	6.67
Burkholderia pseudomallei	1	6.67
Acinetobacter baumanii	1	6.67
Salmonella enterica	1	6.67

Bacteria pattern: Five patient have two isolate bacterial. 1st: *Salmonella enterica* and *Salmonella arizonae*, 2nd: *Klebsiella pneumoniae* and *Streptococcus pneumoniae*, 3rd: *Klebsiella pneumoniae* and *Streptococcus pneumoniae*, 4th: *Eshericia coli* and *Staphylococcus* coagulase negative, 5th: *Acinetobacter baumanii* and *Staphylococcus* coagulase negative

Based on Table 2 have been found 11 species of gram positive cocci bacteria from the culture pus wound infection post section Cesarea were 24 samples. This type of bacteria found: coagulase negative *Staphylococcus* 6 (40%) samples, *Staphylococcus aureus* 2 (13.33%) samples, *Streptococcus pneumonia* 2 (13.33%) samples and *Staphylococcus haemolyticus* 1 (6.67%) samples. There were 11 samples of Gram negative rod bacteria were found. In addition, the remaining seven samples were found with various types of bacteria and in each (6.67%) samples found bacteria that is different from the others. The bacteria are *Pseudomonas aeruginosa*, *Salmonella arizonae*, *Burkholderia pseudomallei*, *Acinetobacter baumannii* and *Salmonella enteritidis*.

So, the results of this study showed that the bacteria most commonly found are coaugalse negative *Staphylococcus* (40%), followed by Gram-negative *Escherichia coli* (13.33%) and *Klebsiella pneumonia* up (13.33%).

Antibiotic sensitivity pattern to bacteria: Based on Table 3 of 24 kinds of antibiotics, Gram-positive bacteria, especially *Staphylococcus* negative coagulase is the most sensitive to the antibiotic of the aminoglycosides group as much as 66.67%. Found 100% resistance to antibiotics of the Cephalosporin group, β-lactams, Amoxicillin and Meropenem. Furthermore, diketahu *Staphylococcus aureus* to antibiotics from the group of aminoglycosides, cefotaxime, Tetracycline and Fosfomycin is 100% sensitive. *Streptococcus pneumoniae* bacteria sensitive to the antibiotic Piperacillin/Tazobactam (66.67%), Amikacin (50%), Fluoroquinolones group (50%) and Meropenem (50%). Later it was found also a lot of resistance that is 100% of the antibiotics from the group of cephalosporins (cefadroxil, ceftriaxone, cephadrine, cefazolin, cefotaxime, cefuroxime, ceftazidime), a group of Penicillin (amoxicillin and ampicillin), group tetracycline (Doxycycline and tetracyclines), gentamicin, chloramphenicol and Fosfomycin, *Staphylococcus haemolyticus* has a high sensitivity (100%) to Vancomycin and Trimethoprim/Sulfamethoxazole. Levofloxacin against (50%). It can be seen also has 100% resistance to Cephalosporin group, Gentamicin, Ciprofloxacin, Amoxicillin, Tetracycline and Meropenem.

Gram negative bacteria that is *Escherichia coli* is known to be sensitive to antibiotic Fosfomycin (100%), Meropenem (100%), followed by antibiotic Amoxycillin+Clavullanic acid (100%), Amikacin (100%) and Levofloxacin (100%). In bacteria *Klebsiella pneumoniae* sensitive to antibiotic Piperacillin/Tazobactam (66,67%), followed by Fluoroquinolon group (Ciprofloxacin and Levofloxacin) (50%), Amikacin (50%) and Meropenem (50%). Also many 100% resistance to Cephalosporine group (Cefadroxil, Ceftrianxone, Cephadrine, Cefazoline, Cefotaxime, Cefuroxime and Ceftazidime), Penicillin group (Amoxycillin and Ampicillin), Tetracycline (Doxycycline and Tetracycline), Gentamycin, Chloramphenicol and Fosfomycin. While in bacteria *Pseudomonas aeruginosa* have sensitivity leves as much as 100% to antibiotic Ceftazidime, Gentamycin, Amikacin, Ciprofloxacin, Levofloxacin, Piperacillin/Tazobactam and Meropenem. But the most resistance to Ceftriaxone (100%), Cefazoline (100%), Ampisilin (100%) and Trimethropim/Sulfamethoxazole (100%).

Based on Table 3, also discovered that bacteria Salmonella arizonae 100% sensitive to antibiotic Netilmycin, Meropenem and Fosfomycin. But there are also many resistance to antibiotic Cephalosporin group (Cefadroxil, Ceftrianxone, Cephadrine, Cefazoline, Cefotaxime, Cefuroxime and Ceftazidime), aminoglycosides

Table 3: Antibiotic sensitivity pattern to bacteria

Nama Bakteri	Hasil		Antibiotik																								
			Sefalosporin							Aminoglikosida			Fluoroquinolon			β-Laktam		Penisilin		Tetrasiklin		Carba-penem	Feni-kol	Gliko-peptida	Fosfo-misin	Sulfo-namid
			CFR	CRO	RAD	CZ	CTX	CXM	CAZ	GEN	AMK	NET	OFX	CIP	LVX	AMC	PTZ	AMX	AMP	DOX	TET	MEM	CHL	VAN	FOS	SXT
S. coagulase negatif	TOT		4	4	4	4	4	4	4	4	6	3	3	4	5	4	1	2	0	4	2	4	4	4	4	5
	S	n	0	0	0	0	0	0	0	1	4	2	1	1	2	0	0	0	0	2	1	0	2	2	2	2
		%	0	0	0	0	0	0	0	25	66.67	66.67	33.33	25	40	0	0	0	0	50	50	0	50	50	50	40
	R	n	4	4	4	4	4	4	4	3	2	1	2	3	3	4	1	2	0	2	1	4	2	2	2	3
		%	100	100	100	100	100	100	100	75	33.33	33.33	66.67	75	60	100	100	100	0	50	50	100	50	50	50	60
S. aureus	TOT		0	0	0	0	1	0	0	1	0	1	0	0	0	0	0	0	0	0	1	0	0	0	1	0
	S	n	0	0	0	0	1	0	0	1	0	1	0	0	0	0	0	0	0	0	1	0	0	0	1	0
		%	0	0	0	0	100	0	0	100	0	100	0	0	0	0	0	0	0	0	100	0	0	0	100	0
	R	n	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
		%	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Ss. pneumoniae	TOT		1	2	1	1	2	1	2	2	2	0	0	2	2	1	3	1	1	1	1	2	1	0	1	3
	S	n	0	0	0	0	0	0	0	0	1	0	0	1	1	0	2	0	0	0	0	1	0	0	0	1
		%	0	0	0	0	0	0	0	0	50	0	0	50	50	0	66.67	0	0	0	0	50	0	0	0	33.33
	R	n	1	2	1	1	2	1	2	2	1	0	0	1	1	1	1	1	1	1	1	1	1	0	1	2
		%	100	100	100	100	100	100	100	100	50	0	0	50	50	100	33.33	100	100	100	100	50	100	0	100	66.67
S. haemolyticus	TOT		1	1	1	1	1	1	1	1	0	0	0	1	2	0	0	1	0	0	1	1	0	1	0	1
	S	n	0	0	0	0	0	0	0	0	0	0	0	0	1	0	0	0	0	0	0	0	0	1	0	1
		%	0	0	0	0	0	0	0	0	0	0	0	0	50	0	0	0	0	0	0	0	0	100	0	100
	R	n	1	1	1	1	1	1	1	1	0	0	0	1	1	0	0	1	0	0	1	1	0	0	0	0
		%	100	100	100	100	100	100	100	100	0	0	0	100	50	0	0	100	0	0	100	100	0	0	0	0
Eshericia coli	TOT		0	0	0	0	0	0	0	0	1	0	0	0	1	1	0	0	0	0	0	2	0	0	2	0
	S	n	0	0	0	0	0	0	0	0	1	0	0	0	1	1	0	0	0	0	0	2	0	0	2	0
		%	0	0	0	0	0	0	0	0	100	0	0	0	100	100	0	0	0	0	0	100	0	0	100	0
	R	n	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
		%	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Klebsiella pneumoniae	TOT		1	2	1	1	2	1	2	2	2	0	0	2	2	1	3	1	1	1	1	2	1	0	1	3
	S	n	0	0	0	0	0	0	0	0	1	0	0	1	1	0	2	0	0	0	0	1	0	0	0	1
		%	0	0	0	0	0	0	0	0	50	0	0	50	50	0	66.7	0	0	0	0	50	0	0	0	33.33
	R	n	1	2	1	1	2	1	2	2	1	0	0	1	1	1	1	1	1	1	1	1	1	0	1	2
		%	100	100	100	100	100	100	100	100	50	0	0	50	50	100	33.3	100	100	100	100	50	100	0	100	66.67
Pseudomonas aeruginosa	TOT		0	1	0	1	0	0	1	1	1	0	0	1	1	0	1	0	1	0	0	1	0	0	0	1
	S	n	0	0	0	0	0	0	1	1	1	0	0	1	1	0	1	0	0	0	0	1	0	0	0	0
		%	0	0	0	0	0	0	100	100	100	0	0	100	100	0	100	0	0	0	0	100	0	0	0	0
	R	n	0	1	0	1	0	0	0	0	0	0	0	0	0	0	0	0	1	0	0	0	0	0	0	1
		%	0	100	0	100	0	0	0	0	0	0	0	0	0	0	0	0	100	0	0	0	0	0	0	100
Salmonella arizonae	TOT		1	1	1	0	1	1	1	1	1	1	1	1	1	1	0	1	0	1	0	1	0	0	1	1
	S	n	0	0	0	0	0	0	0	0	0	1	0	0	0	0	0	0	0	0	0	1	0	0	1	0
		%	0	0	0	0	0	0	0	0	0	100	0	0	0	0	0	0	0	0	0	100	0	0	100	0
	R	n	1	1	1	0	1	1	1	1	1	0	1	1	1	1	0	1	0	1	0	0	0	0	0	1
		%	100	100	100	0	100	100	100	100	100	0	100	100	100	100	0	100	0	100	0	0	0	0	0	100
Burkholderia pseudomallei	TOT		1	2	1	0	1	1	1	1	1	1	1	1	1	1	0	1	0	1	1	1	1	0	1	1
	S	n	0	1	0	0	0	0	1	1	1	1	1	1	1	0	0	0	0	0	0	1	0	0	0	0
		%	0	50	0	0	0	0	100	100	100	100	100	100	100	0	0	0	0	0	0	100	0	0	0	0
	R	n	1	1	1	0	1	1	0	0	0	0	0	0	0	1	0	1	0	1	1	0	1	0	1	1
		%	100	50	100	0	100	100	0	0	0	0	0	0	0	100	0	100	0	100	100	0	100	0	100	100
Acinetobacter baumanii	TOT		0	0	0	0	0	0	0	0	1	0	0	0	1	0	0	0	1	0	0	1	0	0	0	0
	S	n	0	0	0	0	0	0	0	0	1	0	0	0	1	0	0	0	1	0	0	1	0	0	0	0
		%	0	0	0	0	0	0	0	0	100	0	0	0	100	0	0	0	100	0	0	100	0	0	0	0
	R	n	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
		%	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Salmonella enterica	TOT		1	1	1	0	1	1	1	1	1	1	1	1	1	1	0	1	0	1	0	1	0	0	1	1
	S	n	0	0	0	0	0	0	0	0	0	1	0	0	0	0	0	0	0	0	0	1	0	0	1	0
		%	0	0	0	0	0	0	0	0	0	100	0	0	0	0	0	0	0	0	0	100	0	0	100	0
	R	n	1	1	1	0	1	1	1	1	1	0	1	1	1	1	0	1	0	1	0	0	0	0	0	1
		%	100	100	100	0	100	100	100	100	100	0	100	100	100	100	0	100	0	100	0	0	0	0	0	100

KET: CFR: Cefadroxil; CRO: Ceftriaxone; RAD: Cephradine; CZ: Cefazolin; CTX: Cefotaxime; CXM: Cefuroxime; CAZ: Ceftazidime; GEN: Gentamycin; AMK: Amikacin; NET: Netilmycin; OFX: Ofloxacin; CIP: Ciprofloxacin; LVX: Levofloxacin; AMC: Amoxycillin+Clavulanic Acid; PTZ: Piperacillin/Tazobactam; MEM: Meropenem; CHL: Chloramphenicol; VAN: Vancomycin; AMX: Amoxycillin; AMP: Ampisilin; FOS: Fosfomycin; DOX: Doxycycline; TET: Tetracycline; SXT: Trimethoprim/Sulfamethoxazole; S: Sensitif; R: Resisten; n: Banyaknya

group (Gentamycin and Amikacin), Fluoroquinolon group (Ofloxacin, Ciprofloxacin and Levofloxacin), Amoxycillin+Clavunalic acid, Amoxycillin, Doxycycline and Trimethropim/Sulfamethoxazole as much as 100%. In bacteria Burkholderia pseudomallei shows 100% sensitivity to antibiotic aminoglycoside group (Gentamycin, Amikacin and Netilmycin) Fluoroquinolon group (Ofloxacin, Ciprofloxacin and Levofloxacin), Ceftazidime and Meropenem. Aside from that shows high resistance as much as 100% resistance to antibiotic Cephalosporin group (Cefadroxil, Ceftrianxone, Cephadrine, Cefazoline, Cefotaxime and Cefuroxime), Amoxycillin+Claculanic acid, Amoxycillin, Tetracycline (Doxycycline and Tetracycline), Chloramphenicol, Fosfomycin and Trimethoprim/Sulfamethoxazole. Next, bacteria *Acinetobacter baumanii* shows high sensitivity level to antibiotic Amikacin (100%), Levofloxacin (100%), Ampicillin (100%) and Meropenem (100%). While bacteria *Salmonella enteric* have the highest sensitivity to antibiotic Netilmycin (100%), Fosfomycin and

Meropenem (100%). Discovered 100% resistance to antibiotic Cephalosporin group ((Cefadroxil, Ceftrianxone, Cephadrine, Cefazoline, Cefotaxime, Cefuroxime and Ceftazidime), aminoglycoside group (Gentamycin and Amikacin), Fluoroquinolon group (Ofloxacin, Ciprofloxacin and Levofloxacin), Amoxycillin+Clavulanic acid, Amoxycillin, Doxycycline and Trimethroprim/Sulfamethoxazole.

Characteristic of sample: In this study, it is discovered that wound infectio post section caesaria in RSUD Dr. Saiful Anwar palang on January 2012-October 2016 period is likely to happen on patient from group age >35 years. This is accordance with the fact before between age and wound healing process. The result of this analysis also supported by theory from Hidayat and Uliyah that say the speed of cell replenishment is reciprocal with the development or the maturity of someone but the process of aging can slow down the cell replenishment, so, it will slow down the process of wound healing that can cause wound infection.

About the characteristic of the last education level, from the sample it is known to be high school. The study before also find the same result but it don't find any correlation between education level with wound infection because it only the general preview of population that come to the hospital. In the same study, Sidabutar *et al*. also find the same result about the characteristic of work where the most work known from the sample is housewife.

Most of the sample has history of anemia followed by Diabetes Mellitus. Study in Semarang Indonesia on 2010, stated that there is significant connection between anemia and the process of wound healing because of the lower the hemoglobin someone have the longer the wound will be healed, so, it will increase the risk of wound infection (Widyaningrum, 2010). The next hospital sheet from the sample is Diabetes Mellitus. This is accordance with the previous study where there is significant connection between diabetes mellitus with wound healing. After the study done with 38 respondents, 3 people (7.89%) have infection and all of those 3 having diabetes mellitus, so, there is potential of wound infection when they undergo surgery (Indiarti, 2009).

Characteristic of sample shows that there are lots of indications of section Caesaria surgery caused by the emergency condition of the mother caused by severe pre-eclampsia. This fact is supported by literature that said mother that having severe pre-eclampsia or eclampsia must undergo section Caesaria. The next thing is about the duration of the patient's hospital sheet are >3 days. This study is supported by previous study done in Semarang on 2012, said that statistically there are significant connection between the duration of hospital sheet and the case of nosocomial infection (Rosaliya *et al*., 2012).

On the characteristic of the amount of leukocyte, it is discovered that most of the sample that have infection also have leukocyte >11,3×10^3/µL. This condition might happened because the reaction of immune system to bacteria infection.

Prevalence of infection and non-infection sample: The result of this study shows that the prevalence of childbirth with section Caesaria from 2012-2016 went down while the non-infection sample and the one that have wound infection post section Caesaria from 2012-October 2016 are fluctuate. Based on study in Suleymaniye Hospital Istanbul, Turki. Obstetric Gynecology and Microbiology Laboratory shows as much as 5.787 women giving birth with section Caesaria, 74 women have 1.27% chance of having wound infection after section Caesaria. From 5.787 cases, 1.037 (17.92%) are section Caesaria childbirth caused by emergency condition and as much as 4.750 (82.08%) are elective section Caesaria. The 18 womens (0.37%) found have wound infection post elective section Caesaria and 56 women (5.4%) have wound infection caused by emergency section Caesaria (Rosaliya *et al*., 2012). If this is compared with percentage of wound infection post section Caesaria cases in RSUD Dr. Saiful Anwar Malang on October 2016 that is 1.39% where it is nearly the same with Turki, this shows that the procedure of pre and post surgery already good in RSUD Dr. Saiful Anwar. Besides that evaluation is still needed in case of another factors that have correlation with pre and post surgery action to lower the chance of wound infection post section Caesaria.

Bacteria pattern: The result of this study shows there are 11 types of bacteria from pus swab culture on patient with wound infection post section Caesaria. The types Gram positive bacteria that has been found are *Staphylococcus* coagulase negative as much as 6 cacses (40%), *Staphylococcus aureus* as much as 2 cases (13.33%), *Streptococcus pneumoniae* as much as 2 cases (13.33%) and *Staphylococcus haemolyticus* as much as 1 case (6.67%).

While on Gram negative bacteria there are: *Escherichia coli* as much as 2 cases (13.33%), *Pseudomonas aeruginosa* as much as 1 case (6.67%), *Salmonella arizonae* as much as 1 case (6.67%),

Burkholderia pseudomallei as much as 1 case (6.67%), *Acinetobacter baumanii* as much as 1 case (6.67%) and *Salmonella enteric* as much as 1 case (6.67%). So, based on thus result, the ost bacteria that has been found are bacteria *Staphylococcus* coagulase negative that is 40%, followed by *Staphylococcus aureus* that is 13.33% and *Streptococcus pneumoniae* that is 13.3%. Next is *Escherichia coli* that is 13.33% and *Klebsiella pneumoniae* that is 13.33%.

In the study on 2012 about the bacteria pattern on infection post section Caesaria with the study tittle "a study on isolation of different type of bacteria from pus". Bacteria that found most on the pus specimen almost the same but the proposition that make it different are *Staphylococcus aureus* (40%), *Klebsiella* spp., (33%), *Pseudomonas aeruginosa* (18%), *Escherichia coli* (16%) and *Pseudomonas* spp. (7%) (Ilhan *et al*., 2016).

It is also, the same on the study in Kathmandu Hospital Nepal, it shows that the pathogen germ that cause wound infection are *Staphylococcus aureus* (37.5%) and *Escherichia coli* (25%) (Verma, 2012). The difference on the result might happen because changing of bacteria pattern that applied to the pus specimen. Factors that influence the changing of bacteria pattern are the difference of immune response, genetics factor of population, the difference of microbiology analysis, the difference of educational level and the medical treatment also the changing of antibiotic usage pattern (Raza *et al*., 2013).

Gram positive bacteria type *Staphylococcus* coagulase negative is the most. This is occurred because that bacteria is normal flora that naturally exist in human skin, so, it is easier to make the wound is infected after surgery (Kardana, 2016). Then followed by Gram negative bacteria *Escherichia coli* that found in the study sample because laparotomi is surgery that done in abdomen region, so, it is likely to contaminated by normal flora bacteria from the intestine (Warganegara *et al*., 2012).

Bacteria sensitivity patter to antibiotic: in this study we can know that the types of bacteria that we can found the most from pus swab culture is Gram positive bacteria *Staphylococcus* coagulase negative is most sensitive to antibiotic aminoglycoside group that are Amikacin and Netilmycin as much as 67.67%. Also shows a 100% resistance to antibiotic from cephalosporin group that are Cefadroxil, Ceftriaxone, Cephadrine, Cefazolin, Cefotaxime, Cefuroxime and Feftazidime, Amoxycillin, Meropenem, β-lactam group that are Amoxycillin+Clavulanic acid and Piperacillin/Tazobactam. While on Gram negative bacteria that is *Escherichia coli* is most sensitive to antibiotic Fosfomycin (100%), Meropenem (100%), Amoxycillin+Clavullanic acid (100%), Amikacin (100%) and Levofloxacin (100%). The next is *Klebsiella pneumoniae* known to be sensitive to antibiotic Piperacillin/Tazobactam (66.67%), followed by Fluoquinolon group that are Ciprofloxacin and Levofloxacin as much as 50% also, antibiotic Amikacin and Meropenem as much as 50%. Many resistance to Cephalosporin group that are Cefradoxil, Ceftriaxone, Cephadrine, Cefazolin, Cefotaxime, Cefuroxime, Ceftazidime (100%), Gentamycin (100%), Penicillin group that are Amoxycillin and Ampicillin (100%), Tetracycline group that are Doxycycline (100%) and Tetracycline (100%), Chloramphenicol (100%) also, Fosfomycin (100%).

This is accordance with the previous study that report that the resistance of bacteria *Staphylococcus* coagulase negative rise up to antibiotic cephalosporin group that are Cefotaxime, Ceftriaxone, Cefuroxime and Cefalozolin. The resistance increase is so, high to antibiotic cephalosporin third generation that are Cefotaxime and Ceftriaxone (Raihana, 2011).

Based on the the study it is known that, *Escherichia coli* and *Klebsiella pneumoniae* are sensitive to antibiotic Meropenem. That is because Meropenem have wide spectrum, including the bacteria that have resistance to Pencillin, Aminoglycoside and Cephalosporin. So, Meropenem shows good sensitivity on most of the gram negative and gram negative bacteria (Elliott *et al*., 2013).

Most of the bacteria that cause wound infection post section Cesaria in RSUD Dr. Saiful Anwar Malang on Jauari 2012-October 2016 period show highest resistance to Cephalosporin group, Penicillin, Gentamycin and Tetracycline. The study result on ILO patient in India Hospital also shows that *Escherichia coli* and *Kebsiella pneumoniae* are resist to Ampicillin, Ceftriaxone and Gentamycin.

From this study result, it is known that bacteria sensitivity pattern to antibiotic can change. This is happen because the pattern and the sensitivity of the bacteria will change depend on the place and time (Mathai *et al*., 2001). So, further research and monitoring is need to be done in case of bacteria sensitivity pattern to antibiotic on wound infection post section Caesaria in RSUD Dr. Saiful Anwar Malang.

CONCLUSION

The amount of childbirth with section Caesaria from 2012-October 2016 are 4.809 people. The prevalence of

non-infectious patients is 4.785 people (99.5%) and those with infection post section Caesaria are 24 people (0.49%).

The most bacteria that has been found in the resukt of pus swab culture on wound infection post section Cesaria on January 2012-October 2016 periode are *Staphylococcus* coagulas negative, *Escherichia coli*, *Klebsiella pneumonia*.

The sensitivity test of the bacteria to antibiotic shows that *Staphylococcus* coagulase negative are sensitive to antibiotic Aminoglycoside group that are Amikacin and Netilmycin. *Escherichia coli* are sensitive to Fosfomycin, Meropenem, Amoxycillin+Clavullanic acid, Amikacin and Levofloxacin. *Klebsiella pneumonia* are sensitive to Pipercillin/Tazobactam, Fluoroquinolo group that are Ciprofloxacin and Levofloxacin, Amikacin and Meropenem.

SUGGESTIONS

Development checking of bacteria and sensitivity test to antibiotics need to be conducted periodically to get the guid of antibiotic therapy.

Seeing the relust of the study, further research from RSUD Dr. Saiful Anwar Malang is needed to decide the right antibiotic as a fix procedure of antibiotic therapy on the handling of patient with wound infection post section Caesaria.

To minimize the chance of infection post section Caesaria, the improvement and evaluation of pre and post action procedure of section Caesaria surgery is needed.

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