

## Overview of Anti Streptolysin O Test Results in Postpartum Fever Mothers in the Ciamis Region

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Submitted: August 2023

Revised: September 2023

Published: 30 September 2023

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### ABSTRACT

**Introduction:** The puerperium, also known as postpartum, is the period after childbirth. During this period, processes occur that allow the body to restore the reproductive organs. Complications such as infection, haemorrhage and preeclampsia/eclampsia can occur after the postpartum period. These complications are the most common cause of death. Puerperal fever is a symptom of postpartum infection. Puerperal infections are infections passing through the genital tract that occur after childbirth. A temperature of 38°C or more measured orally 4 or more times a day from 2 days to 10 days after delivery. Symptoms of fever during puerperium often occur due to infection with group A Streptococcus hemolytic bacteria. **Objective:** The purpose of this study was to determine the description of the results of anti-streptolysin O examination in mothers for the diagnosis of fever in the puerperium. **Method:** This study is a descriptive study conducted from January to May 2023 with 40 respondents who were in the postpartum period in the Ciamis Health Center working area. The instrument used was the slide method ASTO examination. The data collection technique was based on Accidental sampling which was then processed and presented descriptively in tabular form and explained in narrative. **Result:** The results of the Anti Streptolysin O examination of 40 respondents showed positive results as many as 2 people (5%) and 38 people (95%) with negative results. **Conclusion:** It can be concluded that mothers who are in the postpartum period in the Ciamis Health Center working area have negative Anti Streptolysin O average results.

**Keywords:** ASTO, delivery, postpartum, Streptococcus

## Introduction

The puerperium, also known as postpartum, is the period after childbirth. During this period, processes occur that allow the body to restore the reproductive organs. Complications such as infection, haemorrhage and preeclampsia/eclampsia can occur after the postpartum period. These complications are the most common cause of death. Puerperal fever is a symptom of postpartum infection (Tendean & Wagey, 2021). Puerperal infections are infections passing through the genital tract that occur after childbirth. A temperature of 38°C or more measured orally 4 or more times a day from 2 days to 10 days after delivery. An increase in body temperature that occurs during labour is considered a postpartum infection if an extragenital cause cannot be found (Kemenkes RI, 2015).

In Indonesia in 2020 the number of maternal deaths reached 4,627 deaths. This number has increased compared to 2019 which amounted to 4,221 deaths. Based on the province, in West Java there were 4,221 maternal deaths in 2020 (Kemenkes RI, 2020). According to data from the Ciamis Health Office, maternal mortality in 2022 was 21 deaths. The postpartum period in developing countries such as Indonesia is still a very critical period for mothers after childbirth. It is estimated that 60% of maternal deaths after childbirth and 50% occur in the first 24 hours after delivery (Ibrahim & Annisa, 2020). Maternal mortality in the puerperium is usually 42% due to bleeding from birth canal tears, uterine atony and placental remnants, 13% due to eclampsia, 11% due to post partum complications and 10% due to puerperal infections (Melani & Nurwahyuni, 2022).

According to Aini et al. (2016) mentioned puerperal fever is caused by group A  $\beta$ -hemolytic *Streptococcus* bacteria. Determination of Anti Steptolisin O (ASTO) levels is the main examination used to determine the presence of group A  $\beta$ -hemolytic *Streptococcus* bacterial infection that causes complications. ASTO determination can be performed using the ASTO latex slide agglutination method. This method remains a valid method to detect the presence of *Streptococcus* infection (Fusvita & Susanti, 2017).

Based on research conducted by Idyawati et al. (2022) At the Kilimanjaro Christian Medical Center regarding the factors and causes of puerperal sepsis with the bacterial culture method, the results of *Streptococcus sp* bacteria were 21.4% so that ASTO examination can be a supporting examination for mothers with symptoms of fever during puerperium.

## Objective

The purpose of this study was to determine the description of the results of Anti-Streptolisin O examination in mothers for the diagnosis of fever in the puerperium.

## Method

This study is a descriptive study conducted from January to May 2023 with 40 respondents who were in the postpartum period in the Ciamis Health Center working area. The instrument used was the slide method ASTO examination. The data collection technique was carried out based on Accidental sampling which was then examined and the results were processed and presented descriptively in tabular form which was explained by narration.

## Result

The number of respondents in this study were 40 people who were willing and agreed to informed consent, the characteristics of the research sample are shown in table 1.

Table 1. Characteristics of Mothers with Puerperal Fever at The Ciamis Health Center and Midwives in The Ciamis Health Center Area

No	Characteristics	Total	Percentage (%)
1	Age (Years)		
	< 20 Year	1	2,5
	≥ 20 Year	39	97,5
2	Duration of Postpartum		
	1-3 Week	17	42,5
	4-5 Week	23	57,5
3	Fever		
	Yes	40	100
	No	0	0



Figure 1. ASTO Reagent Control Test  
1. Positive Control, 2. Kontrol Negatif

ASTO examination in positive control is equivalent to 200 IU/mL. This study was conducted in a qualitative way to determine positive or negative results, then if the qualitative examination had a positive sample, it was continued semi-quantitatively to determine the ASTO level in units of IU/mL.

Table 2. Results of Anti Streptolysin O Examination in Postpartum Fever Mothers at Puskesmas and Midwives in the Ciamis Puskesmas Area

Inspection Result	Frequency (N)	Percentage (%)	Average ASTO levels (IU/mL)
Positive	2	5	400
Negative	38	95	-
Total	40	100	

Keterangan : N = Total  
% = Percentage

Based on data from the results of the ASTO examination of 40 samples of postpartum women with a diagnosis of fever, there were 2 positive results (5%) and 38 people (95%) with negative results.

## Discussion

In table 4.1 the sample used in this study were mothers with a diagnosis of fever during puerperium with a total sample of 40 people who were willing to become research respondents, the number of mothers with an average age of 27 years who showed many symptoms of fever during puerperium. Mothers with a diagnosis of fever during puerperium in weeks 1-3 were 17 people (42.5%) and the number of mothers with a diagnosis of fever during puerperium in weeks 4-6 was 23 people (57.5%). According to Nisa Hasnawati & Atmaja (2020) ASTO antibodies usually appear at weeks 1-3 after infection and peak at weeks 4-6 and will remain for several months. Therefore, most mothers in the postpartum period at weeks 4-6 are already seen to form antibodies to *Streptococcus* bacteria. The samples used were samples from mothers who had been diagnosed with fever during the postpartum period with a total of 40 people (100%). According to research Azizah & Rosyidah (2019) mentioned that *Streptococcus* bacterial infections show symptoms of elevated body temperature.

In Figure 4.1 there are positive and negative controls that must be carried out every day with negative controls showing no agglutination on latex slides when mixed with ASTO reagents and positive controls must show agglutination on latex slides when mixed with ASTO reagents. The control material test is used to determine whether the reagent kit is ready to be used or not when doing work. ASTO positive control is equivalent to 200 IU/mL while for negative control < 200 IU/mL (Hayati et al., 2021).

In table 4.2 the results of the examination with a total of 40 samples of mothers with a diagnosis of fever during puerperium obtained the results of 2 positive people (5%) with an average titer of 400 IU/mL this shows that the mother's body with fever during puerperium reacts to *Streptococcus* bacterial infection which is one of the causes of fever during puerperium. Based on the results of interviews from all midwives, it was stated that most of the positive ones experienced a long partus. According to research Idyawati et al. (2022) explained that too frequent vaginal examinations can cause bacterial or germ infections through the gloves of the helper who comes in during the examination. While the negative ASTO test results in febrile mothers during puerperium do not indicate that the body reacts to *Streptococcus* infection or may occur because the body reacts with other bacterial or viral infections other than *Streptococcus* bacteria (Ramlah, 2021).

Based on the results of information obtained through interviews with positive respondents, it was found that the respondents had a history of anemia, which according to research by Tapara Puji Lestari (2017) stated that there is a relationship between anemia and perineal wound healing in the postpartum period which causes infection.

Based on the results of the medical record from the midwife, it was stated that the mother had a fever and was given paracetamol after the body temperature rose. According to Lestari (1967) administration of Paracetamol or ibuprofen show potential antibacterial effects, they have the same ability to inhibit bacterial growth, that's why many mothers with a diagnosis of fever in puerperium do not show ASTO antibodies.

*Streptococcus sp* has several virulence factors that allow it to associate with host tissue, darken the immune response and then penetrate into the host tissue layer by spreading. These antigens can also stimulate B lymphocyte cells. B lymphocytes create strong specific immunoglobulin M (IgM). It also produces IgG through cytokine stimulation. The T cell response to *Streptococcus* bacteria is through TCD4 where this cell is associated with the major histocompatibility antigen molecule or also called MHC class II. This TCD4 cell functions as a helper cell that plays a role in stimulating antibody formation (Siregar, 2008).

## Conclusion

It can be concluded that mothers who are in the postpartum period in the Ciamis Health Center working area have an average result of negative Anti Streptolisin O with a positive percentage of 5% and negative 95%. For further research, it is hoped that it can examine infections caused by *Streptococcus* by examining blood culture in puerperal fever mothers.

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