**Jurnal Analis Medika Biosains (JAMBS)**
Vol.11, No.01, March 2024, pp. 29-35 http://jambs.poltekkes-mataram.ac.id/index.php/home
E-ISSN: 2656-2456 DOI: https://doi.org/10.32807/jambs.v11i1.345

# Analysis of Patient Examination Results with Clinical Symptoms of Gonorrhea Using Microscopic Examination at Puskesmas Dasan Agung

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**Article Info**

**Article history :**

Received : May 26, 2024
Revised : May 28, 2024
Accepted : June 08, 2024

**Keyword :**

*IMS*
*Gram stain*
*Gonorrhea*

**ABSTRACT**

Typical clinical symptoms of gonorrhea occur in men, to confirm a clinical diagnosis then use microscopic examination with gram coloring. The Puskesmas of Dasan Agung became a reference to the inspection of the STI in the city of Mataram. The purpose of this study is to identify clinical symptoms and results of microscopic examination using gram coloring. This type of research is descriptive observational which aims to know or describe the picture of a disease based on direct observation objectively. The population in this study were all patients who came with symptoms that lead to sexually transmitted diseases in January - March, totaling 13 respondents. Sampling was done by non-random purposive sampling method. This research was conducted at the Dasan Agung Health Center laboratory. The results of a study of 13 patients with clinical symptoms of STI obtained 13 positive respondents (100%) identified Neisseria gonorrhoeae. 10 male patients (67.9%) and 3 female patients (23.1%) were identified with heterosexual sexual orientation in 10 cases and 3 were homosexual.

## INTRODUCTION

STIs are diseases transmitted through sexual intercourse with clinical manifestations in the form of abnormalities, especially in the genitals. STIs may not cause symptoms (asymptomatic). To this day, STIs remain a public health problem worldwide, both in developed (industrialized) and developing countries. In 2016, the *World Health Organization* (WHO) estimated that each year there were more than 340 million new cases of treatable STIs such as Syphilis, Gonorrhea, Chlamydia trachomatis, and Trichomonas vaginalis, mainly in men and women aged 15 to 49 years. WHO (2020) estimates that gonorrhea cases in the world reached 82.4 million in the age range of 15 - 49 years. In Indonesia, there are an estimated 2.7 million new cases of gonorrhea in 2020, with a national prevalence of 0.7%, and prevalence in key populations up to 30 times higher. This increase may also be due to the emergence of resistance to all currently used antimicrobial classes as well as the absence of a gonococcal vaccine. (Nisa *et al.*,2023).

How to cite:
Widyastini, N., Zaetun, S., Agrijanti, A., & Rohmi, R. (2024). Analysis of Patient Examination Results with Clinical Symptoms of Gonorrhea Using Microscopic Examination at Puskesmas Dasan Agung. *Jurnal Analis Medika Biosains (JAMBS)*, *11*(1), 29-35. doi:https://doi.org/10.32807/jambs.v11i1.345

Some STIs can also be transmitted from mother to infant during pregnancy, labor, and breastfeeding. The STI Epidemiological Triad includes host, agent, and environment, including viruses, bacteria, and congenital hosts affected by host immunity, nutritional status, gender, age, commercial sex workers, transvestites, and productive age environment, risky environmental factors for sexual behavior, including sexual behavior deviations such as LGBT and faith degradation, partner changing behavior, and drug or substance abuse with others. (Hidayani 2021)

Puskesmas Dasan Agung is a health center with a working area covering 3 villages in the Selaparang area, namely Dasan Agung Village, Dasan Agung Baru Village, and Gomong Village. Based on the profile of Puskesmas Dasan Agung, there is a special program or team to eradicate STIs or what is called LKB (Continuous Comprehensive Services) starting in 2018. In 2015 the number of STI cases (Syphilis) in West Nusa Tenggara was 63 people, decreased in 2016 to 55 people (NTB Health Office, 2017), in 2022 the number of STI cases (HIV) was 69 people, increased in 2023 to 213 people and many occurred in the age group 25-49 years. Based on reports in the last 3 months the number of STI cases at Puskesmas Dasan Agung was 28 people.

Symptoms of STIs can include discharge from the vagina, penis or rectum. In women there is an increase in the volume of color to become whiter, yellowish and even greenish, and emit a foul odor, stinging, pain and heat when urinating, itching around the genitals, growing warts around the genitals, pain during sex and even bleeding.

Gonorrhea is an infection caused by the bacteria Neiserria Gonorrhoeae. The incubation period of gonorrhea is quite short, in women it is asymptomatic (no symptoms) but in men the clinical symptoms are very distinctive due to differences in anatomy and physiology of the genitals in women and men. In women it will cause *cervicitis* and in men it will cause *urethritis*. Determination of gonorrhea disease is by the discovery of *Neiserria gonoorhoeae bacteria.* These bacteria under a microscope with gram staining will take the form of extracellular and intracellular gram-negative *diplococcus*.

STI diagnosis can be established by several methods, namely microscopic examination, culture, and also molecular techniques. According to the *World Health Organization* (WHO) in high-income countries, accurate STI diagnostic tests use technology, but most are not available in low- and middle-income countries because of the high cost which results in further action and treatment can be delayed, so Gram staining is an alternative for STI examination because the examination is practical, gram preparations also have the advantage of being able to determine the morphology of bacteria in addition to Gram properties so that they can have diagnostic meaning.

The Gram staining method has a sensitivity of 50-70% and a specificity of 95-100% for specimens originating from endocervices (Prasetyaningsih, 2022). Conventionally, to classify a bacterium as Gram positive or Gram negative, a Gram staining technique is carried out followed by observation under a microscope. Gram-positive bacteria will be bluish purple in color while Gram-negative bacteria will be red in color (Cappuccino et al., 2020). (Cappuccino *et al.*, 2001).

## MATERIAL/METHOD

This type of research is descriptive observational which aims to know or describe the picture of a disease based on direct observation objectively. The population in this study were all patients who came with symptoms that lead to sexually transmitted diseases in January - March, totaling 13 respondents. Sampling was done by non-random purposive sampling method. This research was conducted at the Dasan Agung Health Center laboratory.

The tools and materials used in this study are microscope, glass object (slide), speculum, bunsen lamp, gentian violet, lugol - iodine, 96% alcohol, safranin and immersion oil. The working method uses gram staining on dry smears of urethral and vaginal swabs and will then be read under a microscope with a with a magnification of 1000x.

Gram staining is done directly in the laboratory. Preparate was placed on the painting bridge, then inundated with crystal violet (primary dye) for 1 minute. Preparate washed with running water and then inundated with lugol iodine (secondary dye) for 1 minute, then washed with running water and diluted with 96% alcohol until faded. The preparation was washed with running water and then inundated with safranin for 1 minute. Finally, the preparate was washed with water and dried.

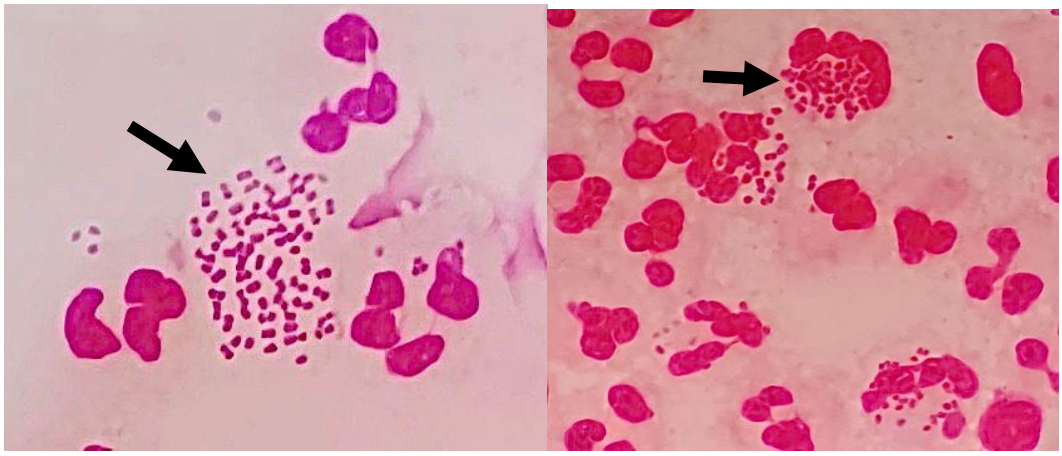
## RESULTS AND DISCUSSION

The research data was obtained from taking vaginal or urethral secret samples from the Puskesmas Dasan Agung and directly carried out laboratory tests at the Dasan Agung Puskesmas laboratory. The following are the results of gram staining on 13 respondents at the Dasan Agung Health Center laboratory

**Table 1.** Microscopic examination results of vaginal and urethral secret using gram stain

| No | Sample Code | Gender | Age (year) | Gram staining results |
|---|---|---|---|---|
| 1. | 0001 | L | 16 | Gram negative diplococcus |
| 2. | 0002 | L | 24 | Gram negative diplococcus |
| 3. | 0003 | L | 18 | Gram negative diplococcus |
| 4. | 0004 | L | 20 | Gram negative diplococcus |
| 5. | 0005 | L | 21 | Gram negative diplococcus |
| 6. | 0006 | P | 41 | Gram negative diplococcus |
| 7. | 0007 | L | 20 | Gram negative diplococcus |
| 8. | 0008 | L | 22 | Gram negative diplococcus |
| 9. | 0009 | P | 24 | Gram negative diplococcus |
| 10 | 0010 | L | 17 | Gram negative diplococcus |
| 11 | 0011 | L | 25 | Gram negative diplococcus |
| 12 | 0012 | P | 34 | Gram negative diplococcus |
| 13 | 0013 | L | 19 | Gram negative diplococcus |

Data on the results of sample examination in table 1 shows that patients who examined vaginal or urethral secret samples totaled 13 people, consisting of 10 men and 3 women. The results of microscopic observations with 1000x magnification found a picture of gram-negative bacteria in the form of diplococcus in 13 patient samples located intracellularly or extracellularly.



**Picture 1.** Gram negative Neisseria gonorrhoeae diplococcus on intracellular and extracellular gram stain (1000x)

**Table 2.** Distribution of respondents based on the results of microscopic examination of intracellular and extracellular Neiserria Gonorrhoeae by gram staining

| N. Gonorrhoeae | Amount | |
|---|---|---|
| | N | % |
| Positive | 13 | 100 |
| Negative | 0 | 0 |
| Total | 13 | 100 |

Table 2, shows that there were 100% (13 people) of vaginal and urethral swabs identified with *Neiserria gonorrhoeae* bacteria. *The* incidence of gonorrhea is more common in patients with male gender, namely 76.9% (10 people), while in female patients as much as 23.1% (3 people) these results are not in line with research (Prasetyaningsih 2022) who said that female patients suffered more gonorrhea than men**.** Gonorrhea is mostly suffered in the age range of 16-25 years as many as 76.9% (10 people) and more> 25 years as many as 23.2% (3 people).

Gonorrhea is a disease that causes inflammation of the mucosa caused by the bacterium *Neisseria gonorrhoeae*, this bacterium can cause *urethritis* in men and *cervicitis* in women. (Springer *eet al.,* 2023)

N. Gonorrhoeae bacteria under a microscope in the form of Gram negative bacteria will appear red. With characteristics shaped like paired coffee beans (diplococci) with flat sides. Direct examination of preparations with gram staining is positive if ≥1 red Gram Negative diplococci (intracellular and extracellular) or ≥5 PMNs per visual field are found with the help of emersion oil.(Gun et al. 2016).

**Table 3.** Symptoms and Clinical Signs of Neisseria gonnorhoe Examination

| Symptoms and Clinical Signs | Positive | |
|---|---|---|
| | Amount | Percentage (%) |
| Vaginal discharge and unpleasant odor | 13 | 100 |
| Itching and pain in the lower abdomen | 3 | 23,1 |
| Pain during micturition | 13 | 100 |
| Swelling of the scrotum | 2 | 15,3 |
| Cervical bleeding | 1 | 7,6 |
| Mucopurulent vaginal fluid | 3 | 23,1 |
| Mucopurulent urethral fluid | 10 | 76,9 |
| Heterosexual couples | 10 | 67,9 |
| Homosexual couple | 3 | 23,1 |

Table 3 shows the clinical symptoms in Gonorrhea patients. Complaints experienced by each patient who conducted an examination at the Dasan Agung Health Center were vaginal discharge and unpleasant odor as many as 13 people (100%), itching and pain in the lower abdomen as many as 3 people (23.1%), pain when urinating 13 people (100%), swelling of the scrotum as many as 2 people (15.3%), cervical bleeding as many as 1 person (7.6%), mucopurulent vaginal fluid as many as 3 people (23.1%), mucopurulent urethral fluid as many as 10 people (76.9), homosexual partners as many as 3 people (23.1%) and homosexual partners as many as 3 people (23.1%). The occurrence of bleeding in the cervix is a clinical sign and symptom of gonorrhea in women and in men there will be swelling of the scotum, discharge of foul-smelling pus, and pain when urinating (dysuria). Positive patients at puskesmas Dasan Agung are given the opportunity to consult with the doctor responsible for handling STI cases and conduct routine examinations and treatment.

In women, symptoms are not typical (asymptomatic), usually the patient does not complain about the presence of indications, the symptoms are not typical so that each complaint in women can be said to be small compared to men. Inflammation in women affects the cervix uteri, sometimes causing pain at the pelvic floor. Symptoms that are very often seen are increased vaginal secretions, continuous urination, bleeding and pain between menstrual phases.(Pitasari, 2019)

Prevention of Gonorrhea is necessary due to its harmful effects and consequences. This phenomenon will also unknowingly become a ping pong ball phenomenon where FSWs will be easily infected by various kinds of venereal diseases carried by their customers, and conversely FSWs can transmit STIs obtained from their customers. (Puspita 2017). There are no typical symptoms of the disease so routine papsmear screening is recommended for housewives and pregnant women with young pregnancy. However, due to the high cost of this test, it is rarely done. The difficulty of treating sexually transmitted infections is due to lack of awareness and fear and embarrassment to examine high-risk married couples (Nurdin et al. 2017). (Nurdin et al. 2017)

The 100% positive result identified Neisseria gonorrhoeae, is considered high because it has a high mortality effect and can have a high potential for transmission if not resolved properly. For countermeasures, an appropriate anamnesis is needed, and supported by standardized laboratory examinations to conduct examinations on patients with sexually transmitted infections (STIs) (Nurdin et al., 2017). Sexually transmitted infections are very dangerous when not

diagnosed properly, so physical examinations, laboratory tests, and good education are needed, so as to reduce the high incidence of Gonorrhea.

## CONCLUSIONS

Based on the research that has been carried out, it is concluded that in the respondent's sample Neisseria gonorrhoeae was found, and there were 13 respondents (100%) positively found gram-negative diplococcus bacteria from 13 vaginal speculum swab samples examined and the same clinical symptoms in each patient such as white discharge, pain when urinating and itching around the genitals.

Based on the conclusions of this study, further researchers need to be advised to conduct further research at the culture and molecular stages on vaginal or urethral speculum swabs of patients with Sexually Transmitted Infections, as well as to the Mataram City Health Office and Puskesmas Dasan Agung to conduct continuous examinations, carry out the treatment stage, and counseling on the prevention of Sexually Transmitted Infections.

## ACKNOWLEDGMENTS

Thanks to the Poltekkes Kemenkes Mataram for funding the continuation of this journal, the Dasan Agung Health Center for supporting the sampling and counseling stages for patients diagnosed with gonorrhoeae infection, as well as the research team and supervisors who have supported all stages of the research.

## REFERENCES

Cappuccino, J.G. and Sherman, N. n.d. "Cappuccino, J.G. and Sherman, N. 2014 Microbiology A Laboratory Manual. *Open Access Library Journal* 1(5)

Tiara Mahatmi Nisa, MS Nurhayati, M.Epid Dwi Sophia Anggiani, dr. Irvin Romyco 2023. Technical Guidelines for Gonococcal Antimicrobial Surveillance. *Indonesian Ministry of Health.*

Gun, Gun, Rico Ardiyanto, Hesti Wahyuningsih Karyadini, and Suryani Yuliyanti. 2016. *Condom Use Behavior and Occurrence of Gonorrhea among Female Commercial Sex Workers in the Localization of Nabire Regency, Papua*.*Jurnal MKMI* 12(1): 76-81

Haryati, Sri, Paramasari Dirgahayu, Yulia Sari, Sigit Setyawan, Yusuf Ari Mashuri, Sutartinah Sri, and Khesara Sastrin Prasita Negara. 2021. "Guidebook for Clinical Skills for Fungal and Parasitic Support Examination in Skin Diseases." (36):1-13.

Jiwantoro, Y. A., & Jannah, M. (2020). Pengaruh Ekstrak Pegagan (Centella Asiatica (L.) Terhadap Profil Darah dan Hepar Pada Tikus Putih yang Diinduksi Asap Rokok. *Jurnal Kesehatan Andalas*, *9*(2), 230-234.

Nurdin, Erpi, Amira Bin, Seh Abubakar, and Nurma. 2017. Identification of Neisseria Gonorrhoeae in Patients with Clinical Symptoms of Sexually Transmitted Disease Infection at Siko *Health* Center, Ternate City in 2016.*Journal of Health Research* 6(1):50-53.

Pitasari, Dyah Ayu, and Sunarko Martodiharjo. 2019. "Retrospective Study: Gonorrhea Infection Profile (Retrospective Study: Gonorrhoeae Profile)." - 31(1):41-45.

Prasetyaningsih, et al. 2022.Implementation Of Dyeing Techniques Grams For

Rapid Detection Of Neisseria Gonorrhoeae Infection Patients In Public Health Centers Cangkringan, Sleman, Diy Implementation Of Gram Staining Techniques For Rapid Detection Of Neisseria Gonorrhoeae Infection Patients In Cangkringan. *Bams-Co Proceedings* 1(1):1-8.

Puspita, Linda. 2017.Analysis of Factors Associated with Sexually Transmitted Events in Female Sex Workers. *Journal of Health Sciences* 2(1):31 - 44.

Springer, Charles, and Philip Salen. 2023. "Gonorrhea." *Medizinische Monatsschrift Fur Pharmazeuten* 44(9):42-45.

Wuri Ratna Hidayani 2021.Health Promotion on Epidemiology, Risk Factors for Sexually Transmitted Infections (STIs) and the Dangers of Lesbian, Gay, Bisexual and Transgender (Lgbt) at Sma N 2 Singaparna. *Jurnal Abdimas Kesehatan Tasikmalaya* 3(1):7-11.