

Prevention of Pathological Leucorrhoea in Pregnancy

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1. Introduction

Leucorrhoea is excessive discharge or discharge other than blood from the vaginal canal with variations in odor, consistency, and color. There are two kinds of vaginal discharge, normal vaginal discharge (physiological) and abnormal vaginal discharge (pathological). Whitish is still within normal limits as long as it is clear or clear, odorless, does not itch and is not excessive. When the discharge turns yellowish, smells and is accompanied by itching, it becomes abnormal vaginal discharge. (Ida Ayu & I gede, 2019); (Tri Dita Kurniawati, 2015); (Ilmiawati & Kuntoro, 2017).

The cause of vaginal discharge that occurs tends to be due to the lack of awareness to maintain health, especially the health of the genital organs. In addition, vaginal discharge is often associated with the acidity of the area around the vagina, which can occur due to an imbalanced vaginal pH. Meanwhile, the level of vaginal acidity is caused by two things, namely internal factors (endogenous) and external factors (exogenous). Endogenous factors, namely abnormalities in the pubic opening. There are two types of exogenous factors, namely infection and non-infection. Infection factors are bacteria, fungi, parasites, viruses, while non-infectious factors are the entry of foreign objects into the vagina, whether intentionally or not (using IUD contraception), unclean washing, moist pubic area, body condition, endocrine disorders (in patients with Diabetes mellitus) or hormones, menopause, stress, chronic fatigue, inflammation of the genitals, the presence of diseases in reproductive organs such as cervical cancer. In addition, using public toilets that are contaminated with *Chlamydia* bacteria, having sex with men who carry the *Neisseria gonorrhoea* bacteria. Apart from the factors mentioned above, other factors that influence vaginal discharge (Fluor Albus) are age and behavior. (Dianti & Isfandiari, 2017); (Marlina, 2017).

Leucorrhoea can lead to infertility (infertile) and pregnancy outside the womb 15% at 30-34 years old, increased 30% at 35-39 years old, and 64% at 40-44 years old, due to blockage of the fallopian tubes. Leucorrhoea is also an early symptom of cervical cancer which is the number one killer for women with an incidence rate of cervical cancer, estimated at 100 per 100,000 population per year, which can end in death. (Trisnawati, 2018); (Dianti & Isfandiari, 2017)

Pregnant women tend to experience vaginal discharge more often than not being pregnant, and vaginal discharge in pregnant women is caused by yeast and Bacterial Vaginosis (BV). Although not all vaginal discharge can be caused by infection, some vaginal discharge can be dangerous because it can cause preterm labor (prematurity), prematurity rupture of membranes or babies with low birth weight (less than 2500 grams). (Mahanani & Natalia, 2015); (Megawati, 2017)

According to the World Health Organization (WHO), the incidence of vaginal discharge in pregnant women ranges from 14-21% in European countries, 13.6% in Japan, 15.9% in Thailand, and 32% in Indonesia. Most pregnant women with vaginal infections at the age of 18-30 years 57.4%, aged 31-40 years 45.45%. Multigravida (82.72%) experienced higher vaginal infection than primigravida (17.27%). Pregnancy trimester I showed 50%, trimester III 45.23%. (Anita Herawati dkk, 2016)

Leucorrhoea can be prevented through a healthy lifestyle such as cleaning the vagina after urinating with a front to back motion, drying the vagina with a single wipe tissue, and not sitting on the toilet because vaginal discharge can be transmitted through the lips of the toilet, and toiletries such as towels. To prevent vaginal discharge in a woman, knowledge of vaginal discharge is needed, because untreated vaginal discharge, especially pathological vaginal discharge can cause infection of the ovaries, which can result in infertility. (Suwanti, 2016)

Based on research conducted by (Mahanani & Natalia, 2015), The 46 respondents of pregnant women who experienced vaginal discharge at the Gynecology and Obstetrics Polyclinic of Kediri Baptist Hospital indicated that adequate maintenance of the reproductive organs still experienced pathological vaginal discharge. (Mahanani & Natalia, 2015). Research (Anita Herawati, Dede Mahdiyah & Husnul Khatimah 2016), explained that vaginal discharge in pregnant women can result in a high risk of premature rupture of the membranes, so that the baby is born prematurely or the baby is born with low birth weight. The most common cause of abnormal vaginal discharge is infection. Leucorrhoea often occurs in the first trimester of pregnancy but will increase in the second trimester to the third trimester. (Herawati et al., 2016). On research (Wawan & Lia Maria, 2017), said that women of childbearing age who experience vaginal discharge are mostly mild. (Wawan, Lia Maria Ulfah, 2017)

2. Discussion

Leucorrhoea is excessive discharge or discharge other than blood from the vaginal canal with variations in odor, consistency, and color. There are two kinds of vaginal discharge, normal vaginal discharge (physiological) and abnormal vaginal discharge (pathological). Whitish is still within normal limits as long as it is clear or clear, odorless, does not itch and is not excessive. When the discharge turns yellowish, smells and is accompanied by itching, it becomes abnormal vaginal discharge. What often causes vaginal discharge include bacteria, viruses, fungi, or parasites. This infection can spread and cause inflammation of the urinary tract, so it can cause pain when the sufferer urinates. (Ida Ayu & I gede, 2019); (Tri Dita Kurniawati, 2015); (Ilmiawati & Kuntoro, 2017); (Megawati, 2017)

The cause of vaginal discharge can be normal (physiological) or (pathological) which is influenced by certain hormones. The liquid is white, odorless, and if a laboratory examination is done, it does not show any abnormalities. This can be seen in women who are aroused during intercourse or during the fertile period (ovulation). (Megawati, 2017)

While abnormal (pathological) vaginal discharge is usually caused by infection / inflammation that occurs due to washing the vagina with dirty water, improper internal examination, excessive use of vaginal rinses, unhygienic examinations, and the presence of foreign objects in the vagina. Apart from infection, vaginal discharge can also be caused by hormonal problems, pants that do not absorb sweat, and sexually transmitted diseases. The discharge is white / green / yellow, smelly, very itchy and accompanied by lower abdominal pain. If someone experiences something like that, then that person must seek medical attention immediately. Treatment will be adjusted according to the cause. (Megawati, 2017)

Leucorrhoea is a condition that can occur in which physiological flour albus can become pathological flour albus due to infection with disease germs or fungi. Leucorrhoea due to fungus is easier to attack pregnant women because during pregnancy pregnant women are very susceptible to infection, because the endurance of pregnant women decreases and increases metabolic needs, and because the vagina becomes rich in glucose content called glycogen, and glycogen is a good food for growth. (Megawati, 2017)

Pregnant women tend to experience vaginal discharge more often than not being pregnant, and vaginal discharge in pregnant women is caused by yeast and Bacterial Vaginosis (BV). Although not all vaginal discharge can be caused by infection, some vaginal discharge can be dangerous because it can cause preterm labor (prematurity), prematurity rupture of membranes or babies with low birth weight (less than 2500 grams). (Mahanani & Natalia, 2015); (Megawati, 2017)

a. Normal Vaginal Condition

The vagina is lined by a flattened layered epithelium. Together with normal vaginal flora, this lining is responsible for retaining vaginal moisture, and plays a role in the nonspecific defense mechanism of the vagina against infection with microorganisms. The vagina can secrete glycogen which is then converted by normal flora into lactic acid. This mechanism causes the vaginal acidity to stabilize at a pH of 3.8-4.5. The acidity of the vagina is a protective mechanism against infection, because it causes pathogenic microorganisms to be unable to survive in the environment. (Usman, 2013)

The normal vaginal flora is dominated by *Lactobacillus* sp. Most of these bacteria produce hydrogen peroxide which can inhibit the growth of other bacteria. Apart from *Lactobacillus* sp., Several other bacteria are also normal vaginal flora, such as *Streptococcus* sp., Some anaerobic bacteria, and some gram-negative bacteria. (Usman, 2013)

Leucorrhoea is a condition in which there is an increase in the production of secretions by the cervix uteri, so that it then comes out through the vagina. (Usman, 2013)

b. Pathogenesis of Leucorrhoea

Leukorrhoea is a symptom where the discharge from the female genitals is not in the form of blood. During development, a woman's genitals undergo changes from infancy to menopause. Flour albus is a condition that can occur physiologically and can become pathological flour albus due to infection with germs. If the vagina is infected with germs such as fungi, parasites, bacteria and viruses, the balance of the vaginal ecosystem will be disturbed, which previously *doderlein* or *lactobacillus* bacteria feed on glycogen produced by estrogen on the vaginal wall for growth and make the vaginal pH become acidic, this cannot happen if alkaline vaginal pH. The pH condition of the vagina makes germs develop and thrive in the vagina. (Megawati, 2017)

Vaginal mucus generally increases during pregnancy due to increased blood supply and hormonal changes, which then lead to increased mucus production from the cervix and changes in the pH balance in the vaginal lining. If the vaginal mucus is causing itching either inside or outside the

vagina, is creamy, gray, greenish or blood-stained or if it is emitting an unusual odor, it may be due to an infection that should be treated before entering labor. Most vaginal infections are treatable, but if left untreated they can be transmitted to the fetus as she passes through the birth canal and this can affect the eyes, mouth or digestive tract of the fetus. (Megawati, 2017). Perhaps vaginal discharge is a symptom most often found in gynecologic sufferers, the presence of this symptom is known to sufferers because it contaminates the pants. (Hermiyanty, Wandira Ayu Bertin, 2017).

There are two types of leukorrhea, namely physiological leukorrhea and pathological leukorrhea. Physiologic leukorrhea consists of fluid which is sometimes a mucus that contains many epithelium with rare leukocytes, whereas pathological leukorrhea contains many leukocytes. Physiologic leukorrhea occurs near ovulation, due to sexual stimulation, before and after menstruation, or hormonal influences on pregnancy. Meanwhile, pathological leukorrhea occurs due to: vaginal infection, which includes general to specific bacteriology; trichomonas vaginalis infection, yeast infection candida albicans, due to benign tumors / injuries (cervical and endometrial polyps, cervical injury); reproductive malignancies which include malignancies of the uterine corpus and vagina accompanied by persistent leukorrhea or tubal leukorrhea carcinoma which is characteristic of "hydroptubae proflues" (liquid like honey), tubal tumors can disappear after a liquid such as honey can be removed. (Hermiyanty, Wandira Ayu Bertin, 2017)

Based on the symptoms, a yellowish-white, grayish-white, greenish / brownish and foamy discharge, thin or thick, smells, itching, pain when urinating, pain during intercourse, burning, sometimes bleeding. If vaginal discharge is not treated and causes pelvic infection / inflammation which can eventually lead to infertility, pregnancy outside the womb or even become a more dangerous disease. (Hermiyanty, Wandira Ayu Bertin, 2017)

From the Department of Obstetrics and Gynecology, FKUI / RSCM Jakarta, a woman is more prone to experience vaginal discharge during pregnancy because during pregnancy there are hormonal changes, one of which is an increase in the amount of fluid production and a decrease in vaginal acidity and changes in digestive conditions. All of this has an effect on an increased risk of developing vaginal discharge, especially those caused by a fungal infection. (Hermiyanty, Wandira Ayu Bertin, 2017)

Liz Kelly said that women who have experienced itching in and around the vagina are the main symptom of vaginal infection, and can experience it at any time and it is accompanied by vaginal discharge. said that there are several symptoms of vaginal discharge including:

- a) A yellowish or white-gray discharge from the vaginal canal. This liquid can be thin or thick, and sometimes foamy. Maybe this symptom is a normal process before or after menstruation in certain women.
- b) In certain sufferers, there is accompanying itching. Usually normal vaginal discharge is not accompanied by itching. Leucorrhoea can also be experienced by women who are too tired or whose immune system is weak. Most of this fluid comes from the cervix, although some comes from an infected vagina, or external genitals
- c) In a newborn girl, within one to ten days, the vagina can release fluid due to the influence of hormones produced by placentae or uri.
- d) Young girls sometimes also experience vaginal discharge just before puberty, usually this symptom will disappear on its own

(Hermiyanty, Wandira Ayu Bertin, 2017)

Not always complaints about vaginal discharge are considered normal, there are several conditions that cause vaginal discharge to be considered to need special treatment such as an inflammatory process in the vagina, itching or burning in the area around the vagina, it hurts when you urinate, or itching during intercourse. The use of soap, perfume, and other cosmetic ingredients in the vagina can stimulate the mucous membrane to form excessive fluid.

c. Causes of vaginal discharge

1) Physiological vaginal discharge

Physiological vaginal discharge can be found in several circumstances, namely newborns until the age of approximately 10 days, time around menstruation, sexual desire, menstrual cycle, pregnancy, use of contraceptive pills, and stress. (Usman, 2013)

vaginal discharge is not a disease but a symptom of disease, so a definite cause needs to be determined. Therefore, to determine the disease, various tests of the discharge are carried out. Leucorrhoea as a symptom of disease can be determined through various questions including when it started, how much, what are the accompanying symptoms (clots or wateriness, there is a wound around the genitals, has been accompanied by blood, has a bad smell, uses an IUD for contraceptive users), is there fever, pain in the pubic area. And to make sure it is necessary to carry out an

examination which includes general and special physical examinations, routine laboratory examinations, and examination of vaginal discharge. Examination for leukorrhea includes Gram stain (for bacterial infections), wet preparations (trichomonas infection), KOH preparations (fungal infections), culture / culture (to determine the type of bacteria causing), and Pap smears (to determine the presence of malignant cells). (Hermiyanty, Wandira Ayu Bertin, 2017)

Women are advised not to underestimate or underestimate the discharge of "leukorrhea" so it is recommended for special or routine examinations so as to determine the cause of leukorrhea early.

It can be distinguished between physiological and pathological vaginal discharge. Physiological vaginal discharge consists of fluid which is sometimes in the form of mucus that contains a lot of epithelium with rare leukocytes, while in pathological vaginal discharge there are many leukocytes. (Hermiyanty, Wandira Ayu Bertin, 2017)

Physiological leukorrhea is found in:

- 1) Newborns until the age of about 10 days, here the reason is the influence of estrogen from the placenta on the uterus and vagina of the fetus
- 2) Time around menarche due to the influence of estrogen, Leukorrhea here goes away on its own, but it can cause anxiety in the parents
- 3) An adult woman, when stimulated before and during coitus, is caused by a transudation from the vaginal wall.
- 4) Time around ovulation, the secretions from the uterine cervical glands become more diluted
- 5) The discharge of secretions from the uterine cervical glands is also increased in women with chronic disease, with neurosis, and in women with ectropion porseonis uteri. (Hermiyanty, Wandira Ayu Bertin, 2017)

2) Pathological vaginal discharge

Pathological vaginal discharge is caused by a medical condition which is usually the result of a parasitic fungal or bacterial infection. The most important cause of pathological vaginal discharge is infection. Here the liquid contains many leukocytes and is slightly yellowish to green in color, often thicker and smelly. Inflammation of the vulva, vagina, cervix and uterine cavity can cause pathological vaginal discharge. In benign or malignant symptom adnexitis, when the tumor with its surface to completely or completely enter the lumen of the genital tract. (Hermiyanty, Wandira Ayu Bertin, 2017)

Pathological vaginal discharge is usually characterized by vaginal discharge that is cloudy or yellow or greenish yellow, has a bad odor, is accompanied by vaginal lesions or irritation, dyspareunia, itching, and bleeding. Patients may also complain of cystitis in the form of external dysuria due to vulvar lesions. (Usman, 2013)

Based on the mechanism of occurrence, pathological vaginal discharge can be divided into infectious and non-infectious pathological discharge. (Usman, 2013). Infectious pathological discharge caused by infection with microorganisms: Bacteria (*Gardnerella vaginalis*, *Chlamidia trachomatis*, *Neisseria gonorrhoeae*, and *Gonococcus*); Fungus (*Candida albicans*); Protozoa (*Trichomonas vaginalis*); Viruses (*Herpes Virus* and *Human Papilloma Virus*). Non-infectious pathological discharge caused by cervical polyps, cervical neoplasms, material left behind (eg tampons or post termination of pregnancy), trauma, atrophic vaginitis, allergic reactions (eg due to vaginal washing), and cleaning the vagina with soap, especially antibacterial products. (Usman, 2013)

The most common pathological discharge in pregnant women is infection in the form of bacterial vaginosis, trichomoniasis, and candidiasis. (Usman, 2013)

1) Bacterial Vaginosis

a) Epidemiology

Bacterial vaginosis is the most common genital infection among other infections. The frequency of occurrence of bacterial vaginosis increases at lower socioeconomic levels, and decreases at higher socioeconomic levels. About 50% of sexually active women have *Gardnerella vaginalis* infection, but only a few develop symptoms. The discovery of *Gardnerella vaginalis* is often followed by other infections that are transmitted through sexual contact. (Usman, 2013)

b) Etiology

The organisms that cause bacterial vaginosis are complex, and are usually associated with infection with *Gardnerella vaginalis*, *Mycoplasma hominis*, *Mobiluncus sp.*, and anaerobic bacteria.

Gardnerella vaginalis is Gram negative, rod-shaped, non-encapsulated, immobile, facultative anaerobic bacteria. These bacteria give negative results in the catalase test, oxidase test, nitrate reduction, and indole test. (Usman, 2013)

c) Pathogenesis

Bacterial vaginosis is a clinical syndrome caused by changes in the composition of the normal vaginal flora. Normal vaginal flora should be dominated by *Lactobacillus* sp. replaced by the overgrowth of other microorganisms.

There can be a symbiosis between *Gardnerella vaginalis* as a builder of amino acids and anaerobic bacteria and other facultative bacteria in the vagina that convert amino acids into amines, thereby raising the pH of vaginal secretions to a pleasant atmosphere for the growth of *Gardnerella vaginalis*. Some amines can irritate the skin and increase the release of epithelial cells, and can cause vaginal secretions to smell. (Usman, 2013)

d) Clinical Manifestations

About 50% of people with bacterial vaginosis are asymptomatic. When symptomatic, usually bacterial vaginosis is characterized by vaginal discharge that is cloudy, watery, gray-white to yellowish in color, with a foul or fishy odor. The smell increases after sexual intercourse.

Based on research in several developing countries, bacterial vaginosis can cause several complications in pregnancy, including preterm birth, premature rupture of membranes, chorioamnionitis, and postpartum endometritis. (Usman, 2013)

e) Diagnosis

On pH examination, you will find an increase in vaginal pH to > 4.5. Examination using a 10% KOH solution causes vaginal secretions to produce a fishy odor due to the production of amines by *Gardnerella vaginalis*. The diagnosis of bacterial vaginosis is based on vaginal pH, fishy odor (whiff test), and the presence of clue cells on microscopic examination. Clue cells are vaginal epithelial cells covered by a bacterial biofilm. (Usman, 2013)

2) Trichomoniasis

a) Epidemiology

Trichomoniasis is an infection of the lower urogenital tract that can occur in both women and men, but the incidence is higher in women than men. Transmission generally occurs through sexual contact. However, transmission can also occur through clothing, towels, or swimming. So, trichomoniasis is often found in people with high sexual activity. (Usman, 2013)

b) Etiology

The cause of trichomoniasis is *Trichomonas vaginalis*, a filiform parasite, 15-18 microns in size, has 4 flagella, and moves like a wave. This parasite breeds in pairs lengthwise and can live in a pH atmosphere of 5-7.5. (Usman, 2013)

c) Pathogenesis

The incubation period of *Trichomonas vaginalis* averaged 4 days to 3 weeks. This parasite is capable of causing an inflammatory reaction in the urogenital tract wall by invading the epithelial and subepithelial tissues. There can be necrosis of the subepithelial layer that spreads to the epithelial surface. This parasite lives in the vagina and urethra by utilizing the remnants of cells, bacteria, and other objects in the vaginal secretions. (Usman, 2013)

d) Clinical Manifestations

In acute cases, the manifestation of seropurulent vaginal discharge is yellowish or greenish, smells bad, and is frothy. The vaginal wall appears reddish and swollen. Sometimes small abscesses form on the vaginal wall and cervix, known as a strawberry appearance, because they appear as red granulation tissue. Symptoms that arise can be accompanied by dyspareunia, postcoital bleeding, and bleeding outside the menstrual cycle.

Several studies have shown that the occurrence of trichomoniasis during pregnancy can cause complications in the form of preterm birth, low birth weight (LBW), and premature rupture of membranes. (Usman, 2013)

e) Diagnosis

The diagnosis of trichomoniasis is made based on microscopic examination of vaginal secretions, culture tests, antigen tests, and DNA probes. (Usman, 2013)

3) Candidiasis

a) Epidemiology

Candidiasis is responsible for the millions of patient visits to general practitioners each year. After the age of 25, an estimated half of women have seen a doctor at least once for candidiasis.

However, candidiasis is found less frequently in girls who have not yet puberty and in women after menopause. The incidence of candidiasis is higher in pregnant women, and is thought to be associated with increased levels of estrogen and glycogen deposition in the vagina. In pregnant women, the occurrence of candidiasis is often recurrent. (Usman, 2013)

b) Etiology

Candidiasis is caused by infection with the yeast *Candida albicans*. These fungi are Gram positive, saprophytic, round to oval in shape, and reproduce by blastospores. (Usman, 2013)

c) Clinical Manifestations

The typical clinical manifestation is the formation of thick white vaginal discharge. Another symptom that appears is moderate to severe itching accompanied by burning, redness, and swelling in the genital area. (Usman, 2013)

d) Diagnosis

The diagnosis is made by microscopic examination of vaginal secretions and fungal culture. (Usman, 2013)

d. Factors that cause pathological vaginal discharge, namely:

1) Vaginal Infections

Infection can be caused by fungi (*Candida Albicans*), parasites (*Trichomonas vaginalis*), bacteria (Gonorrhea / Chlamydia), and viruses (Human papilloma virus). Types of infections that occur in the vagina, namely, bacterial vaginosis, trichomonas, and candidiasis. Bacterial vaginosis is a common vaginal disorder characterized by vaginal discharge and an unpleasant odor. This is caused by decreased lactobacillus, bacterial pathogens (which cause infection) increase, and increased vaginal pH. (Megawati, 2017)

2) Poor hygiene factor

Poor vaginal hygiene can cause vaginal discharge. This is due to increased vaginal humidity so that pathogenic bacteria that cause infection are easy to spread. (Megawati, 2017)

3) Use of drugs (antibiotics, corticosthyroidism, and contraceptive pills) for a long time

Because the use of drugs, especially antibiotics, is too long can cause the immune system in the body. While the use of family planning affects the hormonal balance of women. Usually, women who take antibiotics develop vaginal discharge. (Megawati, 2017)

4) Stress

The brain affects the work of all organs of the body, so if the brain receptors experiencing stress, the hormonal changes in the body change in balance and can cause vaginal discharge. (Megawati, 2017)

5) Allergy

Another cause of vaginal discharge is an allergy due to objects that are inserted intentionally or accidentally into the vagina, such as tampons, drugs or contraceptives, pubic hair, threads coming from blankets, pants, and others. Usually due to injuries such as stabbing, impact, pressure or irritation that lasts for a long time. Because of vaginal discharge, a mother can even lose her baby. As a result of vaginal discharge in pregnancy. (Megawati, 2017)

6) Infection

a) Vaginal discharge due to infection that occurs during pregnancy will increase the risk of premature labor and the fetus is also at risk of infection

b) However, if the vaginal discharge is accompanied by itching and smells, check with your doctor immediately. Because with this condition there is a possibility of infection, if not immediately get treatment it can cause softening in the cervix and contractions will occur prematurely. From several studies, states that premature labor is caused by premature rupture of membranes caused by untreated vaginal infections.

c) For example, in chlamydia infection can occur miscarriage until delivery prematurely (premature delivery). Herpes simplex virus infection can cause inflammation of the baby's brain (encephalitis). *Candida sp* yeast infection can increase the risk of seizures (epilepsy). HPV virus infection can cause laryngeal papilloma in infants which causes respiratory and digestive disorders of the baby to death. *Neisseria gonorrhoeae* bacterial infection can cause eye infections in babies until blindness occurs. (Megawati, 2017)

The discharge that occurs tends to be caused by the lack of awareness to maintain health, especially the health of the genital organs. In addition, vaginal discharge is often associated with the acidity of the area around the vagina, which can occur due to an imbalanced vaginal pH. Meanwhile, the level of vaginal acidity is caused by two things, namely internal factors (endogenous) and external factors (exogenous). (Dianti & Isfandiari, 2017)

Endogenous factors, namely abnormalities in the pubic opening. There are two types of exogenous factors, namely infection and non-infection. Infection factors are bacteria, fungi, parasites, viruses,

while non-infectious factors are the entry of foreign objects into the vagina, whether intentionally or not (using IUD contraception), unclean washing, humid pubic area, body condition, endocrine disorders (in patients Diabetes mellitus) or hormones, menopause, stress, chronic fatigue, inflammation of the genitals, the presence of diseases in reproductive organs such as cervical cancer. In addition, using public toilets that are contaminated with Clamydia bacteria, having sex with men who carry the Neisseria gonorrhoea bacteria. In addition to the factors mentioned above, other factors that affect vaginal discharge are age and behavior. (Marlina, 2017)

However, the evaluation should still be done to rule out infection as the cause of the discharge from the vaginal. The fluid will be taken for examination under a microscope. If it is true that an infection is found, the doctor will provide anti-germ therapy according to the germs that cause it. Leucorrhoea due to infection that is not completely treated can cause expansion of the infection and lead to several other diseases such as urinary tract infections, pelvic inflammation, and others. These diseases can have an impact on future fertility. (Megawati, 2017)

e. Management of Pathological vaginal discharge

Management of vaginal discharge should be done as early as possible to avoid complications as well as to rule out other causes such as cervical cancer which has symptoms of discharge in the form of watery discharge, pink, brown, blood or black and foul smelling. (Megawati, 2017)

Management of vaginal discharge depends on the cause of the infection such as fungi, bacteria or parasites. Generally, drugs are given to treat complaints and stop the infection process according to the cause, the drugs used to treat vaginal discharge usually come from the fluconazol group to treat candida infections and the metronidazole group to treat bacterial and parasitic infections. Medicinal preparations can be in the form of oral preparations (tablets, capsules), topical preparations such as cream that is applied and uvulva which is inserted directly into the vaginal canal. For vaginal discharge that is transmitted through sexual contact, therapy is also given to sexual partners and it is advisable not to have sex while still being treated. (Megawati, 2017)

Management given:

- 1) If Secret is pink, serous and odorless, it may be caused by a nonspecific bacterial infection and hypo-estrogen. Therapi: given oral estrogen / suppositories / dianestrol
- 2) If the secret is white, watery, speckled, plentiful, has a musty smell accompanied by systemic disease: hot spots, vulvar priritis, pseudotifa caused by candida albicans. Therapy: Medika mentosa nystatin 3 x 500,000 iu / day Oral (7-10 days) or 2 x 100,000 iu / day vaginally (14 days).
- 3) Cotrimocazole.
- 4) Gentian Violet 5%
- 5) Mikonazole.
- 6) Hydrocortisone Cream 0.5 Secret greenish yellow, frothy, red, very much itching, rotten smell, tenderness of the divulva and its surroundings, vaginal erythema with petechiae caused by trichomonas vaginalis. Therapy: Metronidazole 3 x 250 mg (oral) and use of condoms during intercourse.
- 7) Very thick yellow discharge, heat, itching, tenderness, pain when urinating, acquired abscess or spread to the endometrium salpink. Conceded by Neisseria Gonorrhoea. Therapi: IM procaine penicillin 4.8 million iu preceded by probenazid 1 g (oral) ½ hour before or Ampicilli 3.5 g orally or tetracycline / erythromycin 4x 500 mg (10 days).(Megawati, 2017)

f. How to Prevent Pathological Vaginal Discharge

To avoid serious complications of fluorine discharge (fluorine albus), management should be carried out as early as possible at the same time to rule out the possibility of other causes such as cervical cancer which also gives symptoms of discharge in the form of watery discharge, pink, brown blood or black and foul smelling. (Hermiyanty, Wandira Ayu Bertin, 2017)

Vaginal discharge can be prevented through a healthy lifestyle such as cleaning the vagina after urinating with a front to back motion, drying the vagina with a single wipe tissue, and not sitting on the toilet because vaginal discharge can be transmitted through the lips of the toilet, and toiletries such as towels. To prevent vaginal discharge in a woman, knowledge of vaginal discharge is needed, because untreated vaginal discharge, especially pathological vaginal discharge can cause infection of the ovaries, which can result in infertility.. (Suwanti, 2016)

It is advisable to always maintain the cleanliness of the intimate area as a preventive measure while preventing the recurrence of vaginal discharge, namely by:

- 1) A healthy lifestyle, namely a balanced diet, regular exercise, adequate rest, avoiding smoking and alcohol and avoiding prolonged stress
- 2) Be loyal to your partner. Avoid promiscuity or use condoms to prevent transmission of sexually transmitted diseases.

- 3) Always keep personal areas clean by keeping them dry and not damp, for example by using pants with a material that absorbs sweat, avoid wearing too tight pants. Make it a habit to change sanitary napkins, pantyliners in time to prevent bacteria from multiplying.
- 4) Get used to washing the right way every time you urinate, namely from front to back.
- 5) Use of vaginal cleansers should not be excessive because it can kill the normal vaginal flora. If necessary, do a medical consultation before using vaginal cleansers. Avoid using talcum powder, tissue or scented soap in the vaginal area because it can cause irritation.
- 6) Avoid using items that facilitate transmission such as borrowing toiletries etc. As much as possible do not sit on the toilet in a public toilet or make a habit of wiping the toilet seat before using it. (Hermiyanty, Wandira Ayu Bertin, 2017)

The hair that grows in the pubic area can become a den of germs if left too long. To maintain cleanliness, periodically cut the hair around the pubic area with scissors or you can shave it carefully. (Megawati, 2017)

Complaints of leukorrhoea in women must be taken seriously because the causes are very complex and many. Leukorrhoea is not a disease but a manifestation of various diseases from mild infection to malignancy. To prevent vaginal discharge, keep the vaginal area clean and clean it every time you go to the toilet. Also often change underwear. Do not wear tights and underwear that do not absorb sweat or retain body heat. (Hermiyanty, Wandira Ayu Bertin, 2017)

g. Complications of pathological vaginal discharge in general

Pathological vaginal discharge can result in infertility (infertile) and pregnancy outside the womb, due to blockage of the fallopian tubes. Leucorrhoea is also an early symptom of cervical cancer which is the number one killer for women with an incidence rate of cervical cancer, estimated at 100 per 100,000 population per year, which can end in death. (Dianti & Isfandiari, 2017)

Pathological vaginal discharge in pregnancy can lead to preterm labor, premature rupture of membranes and the birth of babies with low birth weight. Complications in women can infect the glands inside the vaginal lips and inflammation of the fallopian tubes. It is highly recommended for pregnant women to immediately carry out pregnancy checks if they experience vaginal discharge with very itchy symptoms so that the liquid smells. (Hermiyanty, Wandira Ayu Bertin, 2017)

Types of vaginal discharge that often occur in pregnant conditions, namely vulvovaginal candidiasis, bacterial vaginosis and trichomoniasis. Candidiasis vulvovaginalis is an infection of the vulva or vagina due to uncontrolled growth of the fungus *Candida* sp., Especially *Candida albicans*. (Karo, Cahyanti, Simanjuntak, & Setiarto, 2019). One of the factors thought to cause vulvovaginal candidiasis is the use of hormonal contraceptives. Incidence of vulvovaginal candidiasis in Indonesia 50-75% of women have experienced candidiasis, with 11.2-28.9% of them are contraceptive acceptors. (Samosir, Karo, & Aritonang, 2019)

Vulvovaginal candidiasis occurs due to an overgrowth of fungal cells. (Karo, Cahyanti, Simanjuntak, & Setiarto, 2019) Conditions that facilitate growth include: pregnancy, use of combined oral contraceptives, excessive use of antibiotics, menstruation, diabetes mellitus (diabetes), diseases that reduce immune power, vaginal irrigation / rinse habits, vaginal cleansing / fragrances, vaginal jelly or wearing tight, under-ventilated underwear. Symptoms appear thick discharge, very pungent odor and accompanied by itching due to the whitish discharge already irritating and making vulvar blisters. Pregnant women will also feel pain when urinating and during intercourse. (Hermiyanty, Wandira Ayu Bertin, 2017)

Bacterial vaginosis is caused by changes in the ecosystem in the genital area. It is a state of disappearance of the normal amount of lactobacilli and accompanied by the overgrowth of other microorganisms in high concentrations. Compared to when not pregnant, the frequency of occurrence of Bacterial Vaginosis in pregnant women is quite high, around 16-24 percent. Symptoms appear thick liquid, very strong odor. In severe conditions, itching appears.

Trichomoniasis Vaginalis, which is a protozoan that has a flagellum, in humans it is usually found in the urethra (urinary tract). Generally transmitted through sexual contact. Symptoms that arise are irritation of the genital area, burning sensation, itching and pain that can be felt in the vulva and thighs, perineum (the skin between the vagina and anus), can also be accompanied by pain during urination and intercourse. There may also be spotting after intercourse due to direct contact with an inflamed cervix. A whitish discharge that is frothy and grayish-white or dirty yellow-green in color and has a pungent odor. In severe conditions, the vagina and cervix can be swollen and inflamed with redness. (Hermiyanty, Wandira Ayu Bertin, 2017)

h. Complications of Pathological vaginal discharge in Pregnancy

Leucorrhoea in pregnancy appears due to hormonal increase during pregnancy. In this case, the vagina will produce a white, milky, watery, odorless discharge. Fluid will increase as you get older you are pregnant. This is a natural thing, for that cleanliness and humidity around the vaginal area

must be maintained, also wear underwear that is not too tight and absorbs sweat. However, if the vaginal discharge is accompanied by itching and smells, check with your doctor immediately. Because with this condition there is a possibility of infection, if you don't get treatment immediately it can cause softening in the cervix and contractions will occur prematurely. (Megawati, 2017)

A woman is more prone to experience vaginal discharge during pregnancy because during pregnancy there are hormonal changes which one of the effects is an increase in the amount of fluid production and a decrease in vaginal acidity as well as changes in digestive conditions. All of this has an effect on an increased risk of developing vaginal discharge, especially those caused by a fungal infection. As long as labor has not occurred and the amniotic membrane is intact, where the fetus is still protected by sterile amniotic membranes and amniotic fluid, generally there is no direct effect of vaginal infection which causes vaginal discharge to the fetus. (Megawati, 2017). Some vaginal discharge in pregnancy is dangerous because it can cause preterm labor (prematurity), premature rupture of membranes (PROM), or babies with low birth weight (less than 2500 grams).

The impact of vaginal discharge on pregnant women if not treated is feeling uncomfortable, uterine cancer, ectopic pregnancy, while the impact of vaginal discharge on the fetus is blindness in babies, fetal death, low birth weight, ascending infection. The impact of vaginal discharge on labor is premature rupture of membranes, preterm labor (prematurity), intrapartum infection. (Megawati, 2017)

1) How to Overcome Pathological vaginal discharge in Pregnancy

- a. Without medicine, it can be done by keeping the genital area clean and paying attention to the soap used, preferably unscented soap; Avoid bathing by soaking in a public place; Use cotton underwear, do not use tight underwear; Avoid activities that are too tired, hot and excessive sweating; Vacation to reduce stress because stress is a factor in the emergence of vaginal discharge. (Megawati, 2017)
- b. Medicines can be done in consultation with a doctor because the doctor will provide medicines according to the type of vaginal discharge experienced; Leucorrhoea is very unpleasant, especially for pregnant women; For normal vaginal discharge there is no need for special therapy. The important thing is how to clean the intimate organs properly and regularly, generally, it is enough with special vaginal soap and clean water and keep underwear dry and clean; Meanwhile, abnormal vaginal discharge should immediately get treatment with therapeutic media.

Leucorrhoea that occurs during pregnancy, for example caused by a yeast infection *Candida Sp.* The safest treatment is to use a local medicine made from a cream or a kind of capsule that is inserted into the vagina. Leucorrhoea experienced by pregnant women due to bacterial infection is given the drug in capsule or tablet form which is safe for consumption. In *Niceria gonorrhoeae* infection, there are drugs in capsule form that can be taken orally.

Sebaiknya, segera periksakan kandungan jika terjadi keputihan. Examination is carried out using a special tool to get a better picture of the genitals, such as doing a photocopy in the form of an optic to enlarge the image of the cervix, intercourse, and pubic lips; Apart from medical treatment, usually people will use betel leaves to reduce vaginal discharge. The trick, by drinking betel leaf water that has been boiled first. This method is quite safe for pregnant women and their babies. It's just that because there has been no research regarding the safe dosage for pregnant women, so this cannot be done.

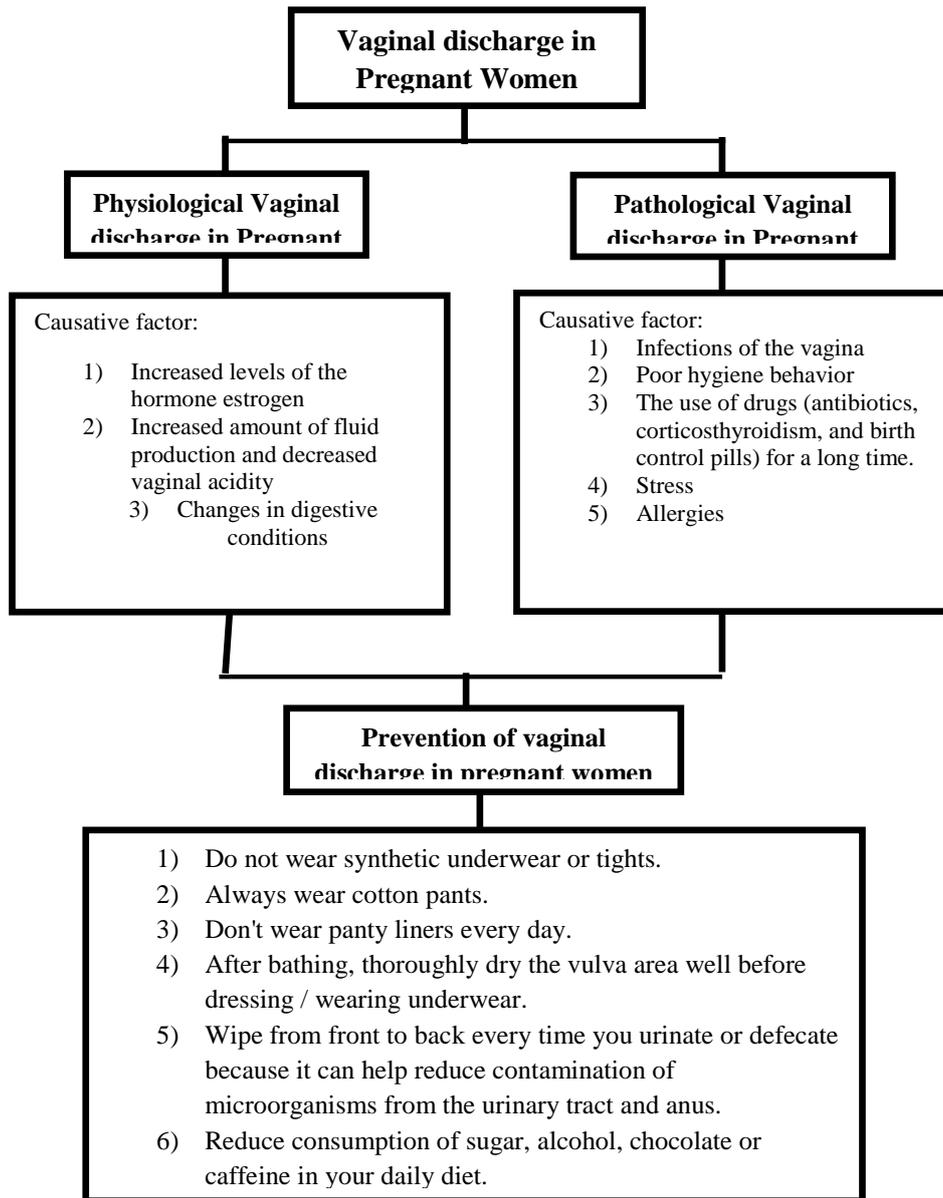
And most importantly if a vaginal discharge that does not heal with regular treatment (antibiotics and anti-fungal), it is necessary to think about the vaginal discharge which is caused by a malignant disease such as cervical cancer. This is usually characterized by a lot of fluid, foul odor, often accompanied by bad blood. Special tests are needed to detect whether it is a symptom of cancer or not. (Megawati, 2017)

2) Handling Pathological vaginal discharge in Pregnancy

Increased levels of the hormone estrogen and blood flow to the vagina make pregnant women often experience vaginal discharge. To reduce the discomfort, you can maintain vaginal cleanliness. Changing underwear more often than usual. Not wearing tights, or those that don't absorb sweat. (Megawati, 2017)

Considering that pregnant women have an increase in the amount of plastic fluid in their body, resulting in frequent urination, it is hoped that: Do not wear synthetic underwear or tights, Always wear cotton pants, Do not wear panty liners every day, After bathing, dry properly. -Correct the vulva area properly before dressing / wearing underwear., Wipe from front to back every time you urinate or defecate because it can help reduce contamination of microorganisms from the urinary tract and anus and reduce consumption of sugar, alcohol, cooking or caffeine in the daily diet -day. (Siti Tyastuti & Heni Puji Wahyuningsih, 2016).

For prevention that can be done during pregnancy can be seen in the scheme below:



Skema pencegahan keputihan pada kehamilan

3. Conclusion

Pregnancy is a natural and physiological process. Every woman who has healthy reproductive organs, if she has experienced menstruation and had sexual intercourse with a man whose reproductive organs are healthy, pregnancy is very likely. Physiological causes of vaginal discharge are increased levels of the hormone estrogen; Increased amount of fluid production and decreased vaginal acidity; Changes in digestive conditions. Meanwhile, pathological causes of vaginal discharge are vaginal infections; Poor hygiene behavior; Use of drugs (antibiotics, corticosthyroidism, and birth control pills) for a long time; Stress; Allergy. prevention of vaginal discharge in pregnant women. Prevention of vaginal discharge in pregnant women can be done by Do not wear synthetic underwear or tights; Always wear cotton pants; Don't wear panty liners every day; After bathing thoroughly dry the vulva area well before dressing / wearing underwear; Wipe from front to back every time you urinate or have a bowel movement as this helps reduce contamination of microorganisms from the urinary tract and anus; Reduce consumption of sugar, alcohol, chocolate or caffeine in your daily diet.

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5. Conflict of Interest

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