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Yohanes Firmansyah
Internship Doctor, Kalideres General Regional Hospital, Jakarta, Indonesia

Hendsun
Internship Doctor, Depati Hamzah General Regional Hospital, Pangkalpinang, Bangka Belitung, Indonesia

Rendy Singgih
Internship Doctor, Cimacan General Regional Hospital, West Java, Indonesia

Corresponding Author:
Yohanes Firmansyah
Internship Doctor, Kalideres General Regional Hospital, Jakarta, Indonesia

Double trouble: A combination from abortus provocation and septic shock how to care on limiting facility

Yohanes Firmansyah, Hendsun and Rendy Singgih

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Abstract
Septic abortion is an infection in the product of conception of pregnancy that can be maintained with a mortality rate of up to 1 in 4 cases. Risk factor of septic abortion is terminating of pregnancy by an incompetent person, the environment or using an instrument that is not sterile or related. One case of septic abortion has been reported which has massive bleeding and infection for less than 17 days. Gynecological examination results found conception or placenta. Comprehensive treatment is a key for save the patients in limited health facilities. Treatment includes administration of RL fluids, dopamine, evacuation of residual conception, and use of broad-spectrum antibiotics. The patient's condition improved after 2 hours of intensive treatment in a limited facility.

Keywords: septic abortion, shock, provocate abortion

1. Introduction
Abortion is a threat to release the uterus or the product of conception at the age of under 20 months, or the baby's weight is less than 500 grams. Natural or intentional causes can cause abortion. Intentionally termination of early pregnancy is referred to as provocative abortion [1]. Provocate abortion is divided into two types, namely medicinal provocate abortion and criminal provocate abortion. Medical provocate abortion is an act of terminating a pregnancy based on specific medical indications determined by a doctor based on the risk to the mother's safety by using drugs according to their function [2, 3]. Criminal provocate abortion often occurs due to society's negative views, social and family due to unwanted pregnancy [4].

Criminal provocate abortion is often a complicated problem because, generally, this type of abortion is carried out by incompetent personnel or parties without attending medical education. The World Health Organization defines this as an unsafe abortion. The definition of unsafe abortion is an unsafe abortion that occurs when a pregnancy is terminated either by a person who lacks medical skills or in an environment that is not up to minimum medical standards, or both.[5] Based on data from 2010-2014, there are approximately 25 million incidents of unsafe abortion each year. From this data, one-third or about 8 million events were carried out under inadequate environmental conditions, were carried out by untrained personnel, and used hazardous and invasive methods. Unsafe abortion causes an estimated 7 million incidence of complications and complications [6].

In developed countries, an estimated 30 women die for every 100,000 unsafe abortions. The incidence has risen sharply to 220 deaths per 100 000 unsafe abortions in developing countries and 520 deaths per 100 000 unsafe abortions in sub-Saharan Africa [7]. In Indonesia, there are no exact figures regarding the number of provocative criminal abortions. Based on recorded data, it is estimated that it has reached 3 million cases [8].

This unsafe abortion causes various forms of complications that are quite dangerous. This complication occurs because pregnancy termination is carried out under inadequate environmental conditions, performed by untrained parties, and using hazardous and invasive methods [6]. Complications arising from unsafe abortion and its treatment include bleeding, infection, and injury to the genital tract and internal organs. One of the most dangerous problems of this complication is massive bleeding, which ends in hypovolemic shock and systemic spread of infection, resulting in septic shock [5].

This case discusses the incidence of criminal provocate abortion in the presence of bleeding and accompanied by a systemic infection.

2. Case Report

A 20-year-old woman came looking very weak and had to be assisted by security officers and her family to enter the emergency room for handling Covid (a limited health facility setting). The patient and family's first admission was that there was a complaint of heavy menstrual bleeding since last night (approximately 12 hours ago), with blood filling all over the mattress sheets and even dripping on the floor quite a lot. The patient's first admission was that it was the fourth day of menses with mid-February's last menses. Adverse trauma history and pregnancy history were initially refuted.

Physical examination was immediately carried out because the patient's condition looked very weak with blood pressure 80/60, pulse 120 x / minute, weak pulsation, temperature 35.8 C, respiratory rate 28x / minute and SpO2 92% (with the help of Oxygen 5 lpm). Immediately infusion of 500 cc RL was carried out to treat hemodynamic problems, and it was suspected that the patient was experiencing hypovolemic shock due to profuse bleeding.

During the obstetric and gynaecological physical examination, it was found that large blood clots accompanied active bleeding with the presence of tissue remnants such as the remaining placenta that came out of the vagina. The patient claims that he is also bleeding profusely at home with changing sanitary napkins every 2 hours, accompanied by heartburn and pain. The patient fainted 2 hours before admission to the hospital.

Fig 1: Results of residual conception for 17 days left in the uterus

The patient admitted that he had no history of fever and only dizziness. The patient admitted to having a history of pregnancy after an obstetric examination, and it was known that the tissue that came out was placental tissue (Figure 1). The patient claimed to have had the first day of his last menstrual period on February 2, 2020, and 17 days ago, he took the abortion drug given by his friend. The patient does not know the name of the drug but has a small white shape. The patient takes two tablets at a time. The patient admitted that he did not feel any significant effects from the drug's consumption, and the next day, the patient decided to go to a traditional birth attendant for a massage so that the baby she was carrying would immediately die. For three days, the patient experienced bleeding after going to a traditional birth attendant, and it was known that the fetus was released on the third day after seeing a traditional birth attendant.

The patient had experienced heavy bleeding 16 days before being admitted to the hospital from the time timeline. The patient denied any history of abortion by inserting devices into the birth canal.

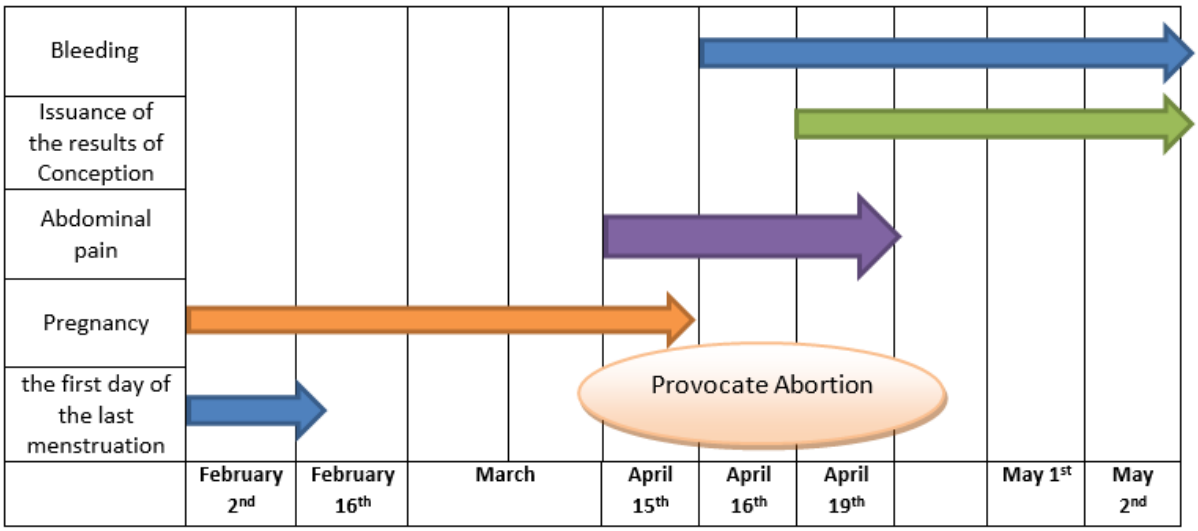

Fig 2: Timeline of the Patient's Disease History

The system's significant physical examination was the presence of pale conjunctiva, pale face and palmar, cold acral, and slowed CRT. 500 cc fluid loading did not raise blood pressure, and loading was continued up to 2000 cc without any blood pressure improvement.

Urine examination for pregnancy examinations and complete urine cannot be done because the patient's urine cannot be collected during fluid loading even with catheter insertion (zero urine output).

A simple complete blood count showed initial results in the form of hemoglobin 7.0 g/dL, leukocytes 57,900/uL, platelets 491,000/uL, hematocrit 30%, MCV 81fl, MCH 28 pg, MCHC 35 g%. The blood cell count was obtained basophils 0%, Eosinophils 0%, Bataang 0%, Segment 88%, Lymphocytes 9%, and Monocytes 33%. Examination of blood sugar at 104 mg/dL. Management of this patient is immediately carried out by cleaning the remaining tissue of conception in the uterus and vagina and fluid and medical management. The patient was provided with 2-way venous access with the first route, namely the immediate administration of RL and 3 mg/Kg of dopamine injection. Minutes of 1.8 ml/hour, 50 mg of ranitidine injection and 8 mg of ondansetron for symptomatic therapy. The second line of venous access is drip two ampoules of oxytocin with one ampoule of methergine dissolved in 500 ml of Ringer's lactate solution and administration broad-spectrum combination antibiotics in the form of metronidazole 3x500 mg IV and Cefotaxime 2x1 gram IV.

After 2 hours of monitoring, the patient's blood pressure increased to 100/80 mmHg, signifying that the general condition was getting better. The patient is referred to the hospital for more intensive care.

3. Results and Discussion

The latest data that discusses the fifth edition of the Millennium Development Goal to reduce the maternal mortality rate by 75% of cases between 1990-2015 shows that a 1.3% reduction in maternal deaths has occurred every year since 1990 to around 293,000 maternal deaths in 2013 Overall. About 14% of total pregnancy-related deaths are due to complications of abortion, either spontaneous or induced, which approximately 40,000 pregnancy-related deaths each year [9, 10].

Systematic analysis of literature conducted by Says *et al*. Revealed that the most significant cause of maternal death is bleeding, hypertension, and sepsis. As well as in the first trimester of pregnancy, the most prominent causes are bleeding and sepsis [11].

Sepsis is a systemic immune response that damages cells and body tissues due to infection, leading to severe sepsis (acute organ dysfunction secondary to infection) and septic shock (severe sepsis with hypotension that does not improve with fluid resuscitation). Severe sepsis and septic shock are major health problems, affecting millions of people worldwide each year, with a death rate of up to 25% of all cases [12, 13].

Septic abortion is an infection of the placenta and fetus (product of conception) which can be sustained. The infection is centred on the placenta, and there is a risk of spreading to the lining of the uterus, leading to pelvic and systemic infections leading to septicemia with the potential to cause extensive damage to vital organs. Septic abortion can quickly become a dangerous and even deadly infection when infected tissue remains in the uterus, especially when toxin-producing bacteria enter the uterus [9].

Worldwide, the majority of septic abortions occur as a result of unsafe abortion. The World Health Organization (WHO) defines unsafe abortion as "a procedure to terminate an unwanted pregnancy either by an individual without sufficient skills or in an environment that does not comply with minimum standards or both [5]."

Several references have reviewed the requirements of safe abortion. (RASCH, 2011) In developing countries, there are five million mothers hospitalized each year as a result of complications of unsafe abortion [14]. In women with severe complications due to abortion, severe infection from septic abortion is the second most common complication after profuse bleeding [15]. It is estimated that the cause of maternal death in developing countries is the incidence of sepsis, with an incidence of around 10% of all maternal deaths [9]. A study from 35 journals regarding severe infection in obstetrics and gynaecology cases in primary and secondary hospitals in developing countries ranged from 3% to 15%, with a median of 5% [15]. However, this high mortality rate is associated with delays in evacuating the remaining infected placenta, severe uterine trauma, heavy bleeding, seeking help, stigma associated with illegal abortion, and limited medical personnel [9].

Another fact reveals that gestational age dramatically affects the mortality rate after induced and spontaneous abortion. As gestational age develops, the placenta will become more extensive with a larger tissue volume to become infected. The mortality ratio per 100,000 spontaneous abortions is 0.3 before 13 weeks of gestation, 1.5 at 13-15 weeks of gestation, and 4.1 at 16-19 weeks of gestation.[16] The ratio of deaths per 100,000 induced abortions is 0.1-0.4 before 13 weeks of gestation. Pregnancy, 1.7 at 13-15 weeks of gestation, 3.4 at 16-20 weeks of gestation, and 8.9 at 20 weeks of gestation [16]. a later gestational age [9].

Sepsis begins with a bacterial invasion that initially resides in the vagina and enters the uterus. This infection is usually preceded by prolonged uterine bleeding. Bacteria in the uterus can gain access to the intervillous spaces of the placenta. From the intervillous space, the infection can progress to septic abortion by more than 60%. The presence of toxins produced by Clostridium bacteria and group A streptococci and exacerbated by an excessive immune response to infection impacts the emergence of systemic infection and multi-organ failure [9].

If the remaining placenta remains for a long time in the uterus, the remaining placenta can become a source of infection that can invade the endometrium to the myometrium [17]. This infection can start to occur in a short time, starting from 6-12 hours after significant traumatic trauma has occurred. Infections involving the uterus are not easily treated with a simple evacuation of the placenta. Uterine infections require special treatment such as high-dose mixed antibiotics. Infections from toxin-producing bacteria such as Clostridium or group A streptococci can cause severe and lethal infections. Necrosis and foci of infection are not confined to the placenta but can spread to the uterine walls and limit antibiotic therapy's effectiveness. Therefore, apart from systemic therapy, therapy to remove the focus of infection is necessary. One way to remove the focus of infection is in the form of curettage and hysterectomy [9].

Normal vaginal flora accounts for the majority of septic abortion cases [17]. However, a bigger problem as a cause of septic abortion is due to the placenta's devitalization by inadequate standard procedures with the weight factor of anaerobic pillow infection [9].

Anaerobic bacteria are present in about 60% of cases, confirmed by positive blood culture evidence. Bacteremia becomes common due to infection in the intervillous space. Bacteremia occurs in 38-61% of women with septic abortion. Another common bacterium common as a bacteremia aetiology is the

anaerobic bacteria Peptostreptococcus, with a prevalence of about 40% of all cases. Cultures of the cervix or fetus or placenta are required in septic abortion with the main aim of determining the aetiology of the causes of infection and antibiotic-resistant bacteria. However, in practice, this is difficult to do in limited health facilities [18, 19].

Most women with severe infections will die from complications of a septic abortion. Interestingly, most of these sufferers do not have any significant medical comorbidities to cause death other than their septic abortion problems. Septic abortion will cause damage to all intrauterine tissues, including uterine tissue and products of conception. This will be aggravated by an abortion that is not sterile, uses chemicals, and is performed by incompetent personnel. Therefore it is essential to explore the incidence of sepsis in abortion and effective treatment to save the sufferer's life [9, 17].

Protocols for treating abortion with septic events and bleeding continue to be developed. Practical clinical steps to ideally detect the incidence of septic abortion include ten main steps, namely (1) history of disease, (2) confirmation of pregnancy, (3) detection of risk factors, (4) complete physical examination, (5) culture of specimens, (6)) Blood tests, (7) imaging and radiological examinations, (7) intravenous fluids, (8) curettage, (9) monitoring vital signs and (10) treating sepsis.

History taking includes a complete history of previous pregnancy history, history of gynaecological abnormalities, history of bleeding, fever, and other relevant symptoms. Confirmation of pregnancy is essential for calculating gestational age and predicting the prognosis of the disease course. The essential detection of risk factors is a history of fetal discharge, the fetus's size that has been released, a history of unsafe abortion with drugs and mechanics, and family planning, which is used mainly the IUD. The physical examination is intended to establish the diagnosis and rule out the differential diagnosis. Physical examination starts with vital signs (temperature, blood pressure, pulse, and respiration), abdominal examination to look for tenderness and pain, obstetric and gynaecological examinations, such as speculum examination for cervical and vaginal inspection, presence of odorous body discharge and bimanual examination for cervical, uterine, adnexal and mass pain. Culture examination is needed because the culture is the golden standard for establishing a diagnosis of sepsis. Aerobic and anaerobic cultures can be taken from the cervix, products of conception, blood, or all of them. Blood tests are essential to see an overall prognosis of the patient's condition. Blood tests include complete blood count, lactic acid level, coagulation factors, hemolysis, kidney function and blood rhesus. Imaging examinations, such as ultrasound, are used to see any residual conception or tissue that may be left in the uterus, as well as computed tomography (CT-scan) to see the possibility of free air in the abdominal cavity and myometrium. Vasopressors as first-line therapy for septic shock is necessary if there is no improvement in vital signs such as blood pressure. Curettage is performed to evacuate the remaining conception that is still in the uterus. A pathological examination should ideally be performed to confirm pregnancy and identify the degree of inflammation. Monitoring vital signs is essential to see improvement and start implementing sepsis and shock sepsis management according to the patient's symptoms [20–22].

Complete septic abortion treatment includes administration of intravenous fluids for stabilization, culture examination, and administration of antibiotics as well as the immediate evacuation of the rest of the conception (class 1B evidence) whether the fetus is still alive or dead because previous studies have shown an increase in maternal mortality if not evacuated completely [9]. Hysterectomy may be considered if the clinical response worsens after curettage, there is extensive peritonic evidence, and there is a pelvic abscess. A CT scan is essential to assess the presence of air in the abdominal cavity and myometrium. One of the causes of gas emergence outside of the presence of organ perforation is the manifestation of Clostridial Myonecrosis infection and Clostridial or Group A streptococcal sepsis. The incidence of bacterial infection above is an indication for a hysterectomy to exclude the focus of infection. The development of refractory septic shock, the incidence of DIC, or the consideration of mechanical ventilation are indicators of multi-organ failure and surgery should be considered immediately. The death rate for septic abortion alone has reached 50% of septic shock cases due to septic abortion. Consideration of delaying a hysterectomy risks increasing the rate of complications, organ failure and leading to death.[23]. Clinical improvement should occur 6 hours after curettage, fluid resuscitation, vasopressors, and antibiotic administration. If there are no signs of improvement for more than 6 hours, consider a hysterectomy to save lives [9].

Administration of fluids in patients with sepsis and septic shock should still be given. This action is done in addition to improving the patient's condition and ruling out the possibility of hypovolemic shock. In septic shock, blood pressure will not increase with intravenous fluids, but hypotension will be resolved with intravenous fluids if the patient experiences hypovolemic shock. Crystalloids are needed as initial fluids in resuscitation for severe sepsis and septic shock (grade 1B). Hydroxyethyl starches can be used for fluid resuscitation of severe sepsis and septic shock (grade 1B). Albumin has a unique role when resuscitation in severe sepsis and septic shock requires a substantial amount of crystalloid fluid (grade 2C). Fluid challenges are undertaken to rule out hypovolemic shock at a minimum dose of 30 mL/kg crystalloid (some of this may be equivalent to albumin). Faster fluid administration and larger amounts of fluid may be required in some patients (grade 1C). Regular monitoring for signs of improvement is carried out [12, 13].

Vasopressor administration is necessary if a septic shock is suspected. Vasopressor therapy is aimed at when the mean arterial pressure (MAP) is below 65mm Hg (grade 1C). Norepinephrine is the vasopressor of the first choice in cases of septic shock (grade 1B). According to the clinical patient, Epinephrine administration (adding or replacing the function of norepinephrine) can be considered to maintain the blood pressure state (grade 2B). Another alternative is giving 0.03 units/minute of vasopressin given together with norepinephrine (NE) to increase MAP or reduce the dose of NE. From the study results, the use of low-dose vasopressin alone is not recommended for treating hypotension caused by sepsis and vasopressin doses higher than 0.03-0.04 units/minute constitute backup therapy when all therapeutic modalities have failed (UG). Dopamine can also be used as a modality in treating sepsis and is often used in the field. Dopamine as an alternative vasopressor agent to norepinephrine can be used only in highly selective patients (e.g., patients with a low risk of tachyarrhythmias and absolute or relative bradycardia) (grade 2C). The use of phenylephrine is not recommended in the treatment of septic shock except in circumstances where (a) norepinephrine is associated with severe arrhythmias, (b) persistently high cardiac output and low blood pressure or (c) as rescue therapy when the inotrope / vasopressor drug is combined with Low doses of vasopressin failed to achieve the desired

MAP target (grade 1C). All patients requiring vasopressors should have arterial catheters placed as soon as possible if resources are available (UG) [12, 13].

The use of inotropic drugs is also in a position to treat septic shock. The use of dobutamine up to 20 micrograms/kg/minute can be given or added to vasopressor drugs (if being used) in the presence of (a) dysfunction with increased cardiac filling pressure and low cardiac output, or (b) signs of a marked sign of hypoperfusion, despite achieving adequate intravascular volume and adequate MAP (grade 1C) [12, 13].

The use of steroid drugs to suppress inflammation is also recommended in treating septic shock with some notes such as not using intravenous hydrocortisone to treat septic shock patients if adequate fluid resuscitation and vasopressor therapy has been able to restore hemodynamic stability. If the goal of resuscitation has not been achieved, intravenous hydrocortisone at a dose of 200 mg per day (grade 2C) is recommended. In septic shock management, it is strongly discouraged to use the ACTH stimulation test to identify patients with septic shock who need hydrocortisone therapy (grade 2B). The hydrocortisone dose's discontinuation should be gradual (tapering off), starting when the vasopressor is not reused as a treatment for patients (grade 2D). Corticosteroids are not given for the treatment of sepsis in the absence of shock (grade 1D). Continuous flow (grade 2D) should be used for hydrocortisone infusion.

Apart from stabilizing hemodynamics, the management of septic shock also requires eliminating widespread foci of infection through the use of antibiotics. Several types of antibiotics that are the leading choice of treatment for septic abortion are (1) Gentamicin (5 mg/kg/day) and clindamycin (900 mg every 8 hours) with or without ampicillin, (2) Ampicillin (2 g every 4 hours) and gentamicin with metronidazole (500 mg every 8 hours), (3) Levofloxacin (500 mg daily) and metronidazole, (4) Imipenem (500 mg every 6 hours), (5) Piperacillin - tazobactam (4.5 g every 8 hours)), (6) Ticarcillin - clavulanate (3.1 g every 4 hours) [24].

This case represents the first treatment for provocative abortion with septic shock in a setting in a limited health facility to reduce maternal mortality.

4. Conclusion

Septic abortion is an infection in the conception products that can be maintained with a mortality rate of 1 in 4 cases. Septic abortion is caused by terminating a pregnancy by an incompetent person, in the environment or using unsterile equipment or both, reported one case of septic abortion which has experienced bleeding and infection for approximately 17 days. The results of the gynaecological examination found residual conception or placenta. Comprehensive treatment can save patients even in limited health facilities. Treatment is given in the form of administration of RL fluids, dopamine, evacuation of the product of conception, and broad-spectrum antibiotics. The patient experienced improvement after 2 hours of intensive treatment in a limited facility.

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