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Research Paper

Nursing Care for Natural Childbirth with Gestational Diabetes Mellitus: A Case Study

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ABSTRACT: *Metabolic complications that often occur in pregnant women are gestational diabetes. This problem can increase perinatal complications and the risk of other metabolic diseases for the mother and baby during delivery. This case study aimed to determine the nursing care for natural childbirth patients with Gestational Diabetes Mellitus at the dr. Zainoel Abidin Regional Public Hospital of Banda Aceh. Interventions performed in the diagnosis of risk of injury to the fetus were monitoring the fetal heart rate and sleeping on the left side position. Furthermore, non-pharmacological massage effleurage techniques were conducted for the diagnosis of labor pain, deep breathing relaxation techniques for anxiety, active management of the third stage with oxytocin injections for the bleeding risk, education of rolling massage technique for ineffective breastfeeding and prevention of infection and wound care for damage on the integrity of the skin and tissues. The results of the evaluation after treatment showed that the diagnosis of the risk of injury to the fetus was partially resolved, labor pain was partially resolved, the risk of bleeding was resolved, ineffective breastfeeding was resolved, and damage to the integrity of the skin and tissues was partially resolved. The nurses are suggested to refer to this paper when implementing natural delivery nursing care for patients with gestational diabetes mellitus.*

KEYWORDS: *Nursing care, natural childbirth, gestational diabetes mellitus*

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I. INTRODUCTION

Complications of pregnancy and childbirth are a direct factor causing the high maternal mortality rate (MMR) in Indonesia. Some of these complications include hypertension, infection, bleeding, prolonged labor, abortion and gestational diabetes[1]. Gestational diabetes mellitus can increase perinatal complications and the risk of other metabolic diseases for mother and baby during delivery [2]. According to the International Diabetes Federation[3], globally the prevalence of pregnancies with gestational diabetes is 16.7%. Meanwhile in Indonesia, there are still relatively small number of studies on this issue, most recently it was recorded that cases of diabetes in pregnancy were at 1.9-3.6%[4].

The cause of gestational diabetes mellitus is associated with a decrease in insulin sensitivity reaching 40% throughout pregnancy. Maternal obesity, maternal age during pregnancy, family history of diabetes mellitus are risk factors for gestational diabetes mellitus [1]. Management of diabetes mellitus is carried out based on the gestational age of the pregnancy. In the first and second trimesters of pregnancy, if there are no other complications, treatment might involve the combination of regulating food portions and receiving intense insulin therapy under the guidance of medical professionals. If the gestational age has reached 38 weeks and there are no signs of labor, then labor induction should be considered to reduce the risk of stillbirth[4].

It is important to treat pregnant women with gestational diabetes consistently in order to protect both the mother and fetus. Appropriate interventions are needed in providing nursing care to patients with gestational diabetes mellitus to reduce complications in childbirth so that appropriate nursing actions can be taken. This case study aimed to examine the implementation of "Normal Childbirth Nursing Care with Gestational Diabetes Mellitus in the Delivery Room of the Regional General Hospital dr. Zainoel Abidin Banda Aceh".

II. METHOD

This A 33 year old woman G4P3A0, gestation age 38-39 weeks with HPHT March 12 2022 and TTP December 17 2022 with complaints of diarrhea accompanied by heartburn since 2 days before entering the hospital. The patient said she went to the hospital on the advice of an ob-gyn specialist because she was diagnosed with Gestational Diabetes Mellitus. Previously, the patient had never suffered from DM and had a history of giving birth to babies > 4000 grams in 2 previous deliveries.

The results of the assessment on December 5 2022 showed that the patient said "I was hospitalized last month because of diabetes." Patient with obstetric status G4P3A0, with GDS 192gr/dL, FHR 139x/minute, patient looks tired. The mother actively senses the fetus movement. Labor was induced twice during the first stage, namely at 13.05 WIB and 19.15 WIB with Misoprostol 2 mcg/6 hours and VT examination at 19.00 WIB, cervical opening 2 cm. Based on the data that has been obtained, the nursing diagnoses that raise is the injury risk to the fetus associated with labor induction.

The second diagnosis, namely labor pain related to uterine contractions, this diagnosis was raised because it matched the information gathered from subjective data. The patient said "my stomach feels tense". The patient said "I feel like I'm going to defecate". PQRST pain assessment: P: lower abdominal pain, Q: heartburn like spinning and tension, R: lower abdomen and radiates to the waist, S: 4 (NRS), T: comes and goes, hiss 2 times in 10 minutes duration 16 seconds, mucous blood comes out of the birth canal with the cervical opening 2 cm. Vital signs checked, blood pressure 119/91 mmHg, pulse 82x/minute, breathing 19x/minute, temperature 36.5˚.

Furthermore, the third diagnosis is anxiety related to a situational crisis. This diagnosis was raised because it was in accordance with the data obtained from the patient, namely the patient seemed difficult to rest, the patient looked anxious. Patient often ask about her condition, such as "what time will the labor start?" ", the patient also said, "will you put the medicine in through the bottom again?".

In the second stage of labor, data on amniotomy was obtained with greenish amniotic fluid, heart rates 164x/minute, labor was agitated by shoulder dystocia, birth weight was 4,110 grams, so a diagnosis the injury risk to the fetus was made related to the size of the fetus.

Diagnosis labor pain associated with cervical dilatationwas made since it matched the patient information, where the patient said "it hurts so much, I want to keep pushing". The patient also said "I can't take it anymore". The patient appeared to be grimacing with the VT examination cervical opening 10 cm, hiss 4 times in 10 minutes duration 45 seconds, the pain scale was 9 and there was an attempt to push from the mother.

In the sixth diagnosis, namely the risk of bleeding related to the third stage of labor, the data obtained was that the patient said "I feel tired and thirsty". Then an assessment was carried out and it was found that there was a grade I laceration on the perineum and vaginal mucosa, the wound appeared to be bleeding ± 100cc with strong uterine contractions and an empty bladder, the extremities looked pale and cold.

Entering monitoring at Stage IV based on data, the seventh diagnosis was raised, namely ineffective breastfeeding related to situational (lack of exposure to information). The patient said "my nipples hurt when my baby sucked", Mrs. DJ said "my milk hasn't come out yet", and The patient claimed "I just want to give formula milk". From the results of the examination, it was found that the colostrum had not come out 2 hours after delivery and the colostrum had not come out when stimulated.

In the fourth stage during regular monitoring of the patient, the patient said "it hurts in the lower part" and the patient seemed afraid to move. PQRST pain assessment, P: stitches on the perineum, Q: painful and sharp, R: genitalia, S: 2 (NRS), T: when moving and urinate. Examination of vital signs, blood pressure 137/86 mmHg, pulse 66x/minute, respiration 19x/minute and temperature 36.8˚, so a diagnosis of acute pain related to a physical injury agent was made.

Furthermore, data was obtained from the patient saying "I felt sore in my lower part when urinating", with the results of the examination showing that there were sutures on the perineum, the location of the wound was closed and the condition of the wound was moist, so a diagnosis of damage to skin/tissue integrity related to mechanical factors was raised.

III. FINDINGS

Risk of injury to the fetus related to induction of labour

The results of the evaluation of the interventions that have been carried out are monitoring FHR every 30 minutes during the birth process, monitoring the mother's vital signs, adjusting the patient's position to the left side. So the patient data was obtained saying that it was more comfortable to sleep on the left side with BP 124/80 mmHg, HR 78x/minute, RR: 18x/minute with nasal cannula 3L/minute, FHR 168x/minute, VT at 23.00 WIB opening 6cm.

Labor pain associated with uterine contractions

Evaluation results from the implementation of providing non-pharmacological techniques to reduce pain (deep breathing) and providing non-pharmacological techniques to reduce pain, namely deep breathing and *effleurage massage* , namely pain scale 3, pain is felt like tension and pressure. His 4 kai in 10 minutes with a duration of 35 seconds, and Mrs. DJ said he felt more relaxed by taking deep breaths.

Anxiety is related to a situational crisis

Encouraging the patient to listen to murotal to reduce anxiety and pain, namely the patient said that her fear reduced slightly when she felt the baby move when spoken to, with objective data from Mrs. DJ seemed calmer and was able to carry out distraction exercises in the form of talking to the fetus.

The risk of injury to the fetus is related to the size of the fetus

In stage II, the results of the evaluation of the implementation that had been carried out were carrying out the McRobert maneuver to overcome shoulder dystocia, and helping to suction the baby, namely that the baby was born not crying immediately, the baby cried weakly for up to 15 minutes after delivery. The mother's vital signs in the second stage were blood pressure 159/73 mmHg, pulse 111x/minute, respiration 21x/minute.

The risk of bleeding is associated with childbirth

The evaluation results of the intervention in the form of a collaboration with the bleeding control drug Oxytoxin 10 IU were that the patient's general condition was weak, uterine contractions felt strong, the placenta was delivered complete, bleeding was ±150 cc.

Breastfeeding is not effective due to situational conditions

The results of the evaluation of the diagnosis of ineffective breastfeeding have carried out several interventions, namely explaining the benefits of breastfeeding for mother and baby, teaching four breastfeeding positions and proper attachment, teaching postpartum breast care (rolling *massage*). So the data obtained was that colostrum had come out after 3 oxytocin massages, the baby's attachment when breastfeeding looked good and the baby's sucking reflex was strong.

Acute pain related to a physical injury agent

Furthermore, the results of the evaluation of the intervention taught non-pharmacological techniques to reduce pain (deep breathing relaxation) in the diagnosis of acute pain in the fourth stage, namely the patient said the pain was felt only when urinating with a pain scale of 1.

Impaired skin/tissue integrity related to mechanical factors

The evaluation results of the implementation that have been carried out are scheduling position changes every 2 hours, explaining signs and symptoms of infection, teaching how to check the condition of wounds, recommending increasing nutritional intake, recommending increasing fluid intake. So data was obtained on the condition of the stitched wound which looked reddish and moist, there were no signs of infection, the patient's general condition was good with laboratory results after delivery, namely leukocytes 9.50 x 10^3/mm^3.

IV. DISCUSSION

First Stage of Labor:

Risk of Injury to the Fetus

The risk of injury to the fetus is a condition where the fetus is at risk of experiencing danger or physical damage during the pregnancy and delivery process. In the first stage of the latent phase, labor induction is given in the form of vaginal misoprostol. Misoprostol is mainly used as an induction of labor in pregnancies with complications such as diabetes. Induction of labor can cause a risk of injury to the fetus. One of the side effects of labor induction on the fetus is abnormal fetal heart rate [5].

Implementation carried out by Mrs.DJ is monitoring the patient's vital signs including blood pressure, breathing, pulse, and monitoring the fetal heart rate per hour. Collaborative administration of 10 units of novorapid injection every eight hours. According to the Indonesian Endocrinology Association [4], blood glucose checks must be carried out strictly to maintain maternal blood glucose levels between 70-140 mg/dL. Blood glucose control requires insulin doses with subcutaneous insulin administration to avoid the risk of hypoglycemia in neonates.

Apart from monitoring the patient, the author also positioned the patient on his left side. The left side sleeping position is the best position, where for pregnant women this position can reduce pressure on the inferior vena cava blood vessels at the front of the spine which returns blood from the lower body to the heart and this position will also ensure healthy blood circulation for fetus [6].

Pain in Childbirth

Pain is caused by uterine contractions as a sign of labor progressing. Pain is defined as a sensory and emotional experience related to actual tissue damage with sudden or slow onset and mild or severe intensity [7].

The implementation is to identify the characteristics of pain and provide non-pharmacological techniques of deep breathing relaxation. According to Marsilia and Tresnayanti[8], the level of labor pain is described by the intensity of pain prepared by the mother during the birth process. Providing deep breathing relaxation techniques can reduce tension and increase physical and emotional relaxation.

Another implementation is in the form of providing non-pharmacological techniques with *massage effleurage*. *Effleurage massage* is carried out by applying hand pressure to soft tissue such as muscles or ligaments without causing movement or changing position itself to relieve pain [9]. According to Wulandari and Putri [10], *effleurage* during labor is done using soft and light fingertips and massage is done on the back so that the patient is more relaxed. *Effleurage massage* is proven to be more effective in reducing labor pain in pregnant women.

Anxiety

Anxiety is an emotional condition and an individual's subjective experience of an unclear and specific object due to anticipation of danger which allows the individual to take action to face the threat [7]. This diagnosis was made because Mrs. DJ expressed his fears and worries about the condition of his delivery. The anxiety that is felt when facing the birth process can cause stress which causes excessive hormone release. One of these hormones is steroid hormones and catecholamines which can trigger smooth muscle tension and blood vessel vasoconstriction. This condition can cause pain impulses to multiply.

The implementation given by nurses to overcome anxiety nursing diagnoses is distraction therapy. Providing deep breathing relaxation and distraction techniques helps focus attention and reduces stress, fear and pain [11]. After the implementation was carried out, the patient said she was calmer and more relaxed than before using the distraction technique. Besides that, Mrs. DJ also said that the pain and fear she felt had reduced, although slightly.

Second Stage of Labor:

Risk of Injury to the Fetus

The risk of injury to the fetus can be established if there is a birth emergency which can be caused by the large size of the fetus, namely shoulder dystocia. Shoulder dystocia causes the baby's shoulders to become stuck in the birth canal and can cause prolonged labor. This condition can cause perinatal asphyxia which is characterized by a low APGAR Score at birth[12].

Implementations carried out include monitoring the mother's vital signs, monitoring the fetal heart rate, performing the McRobert maneuver and suctioning the baby. McRobert's maneuver is one of the procedures for emergency delivery, namely shoulder dystocia. When shoulder dystocia occurs, there is 4 minutes to perform shoulder delivery maneuvers before brain damage due to hypoxia develops in the baby. The McRobert maneuver is performed by flexing the thigh and bringing the knee as close to the chest as possible or abduction position [13].

Third Stage of Labor:

Bleeding Risk

The risk of bleeding can occur due to trauma to the birth canal. Due to the large size of the fetus, there was perineal rupture and grade 1 laceration of the vaginal mucosa in Mrs. DJ. Perineal rupture is one of the causes of post partum maternal bleeding, especially bleeding in the third cal[14].

Implementation of monitoring signs and symptoms of bleeding, maintaining *bedrest position* during bleeding, and collaboration in administering bleeding control drugs. In the third stage of management, 10 units of oxytocin injection is given to stimulate uterine contractions which can minimize bleeding. Based on research conducted by Widayati & Utami [15], there is an effect of giving oxytocin injections on bleeding and the length of time in the third stage of labor. After implementation, the data showed that uterine contractions were palpable, the placenta was complete and bleeding was ±100 cc so that the problem of bleeding risk was partially resolved.

Fourth Stage of Labor:

Ineffective Breastfeeding

Ineffective breastfeeding is a condition where the mother is unable and the baby experiences dissatisfaction or difficulty while breastfeeding. The patient complained that the milk had not come out and the nipples hurt when sucked, so the diagnosis of ineffective breastfeeding was raised. This data is in accordance with research by Dina[16], where colostrum expenditure can be influenced by several things such as pain during labor, baby sucking, complications in the baby during labor and the mother's nutritional status.

The implementation given to patients is health education and a demonstration of oxytocin massage or also known as Rolling Massage. Oxytocin massage is one of the right solutions to speed up and facilitate the production and release of breast milk, namely by massaging along the spine (vertebrae) up to the fifth or sixth rib bone. Rolling massage is the act of massaging the mother's back along the spine so that the mother is relaxed and comfortable to facilitate the release of breast milk and meet the baby's needs [17]. Based on research conducted by Darmawati et al (2022) [18], it was found that there was a significant difference between the adequacy of breast milk in the control group and the intervention group as seen from the difference in BAK frequency (p=0.036), breastfeeding satisfaction (p=0.001), and increase in Baby weight (p = 0.001) measured 7 and 30 days postpartum after rolling massage.

Acute Pain

Acute pain related to physical injury agents due to suture wounds is carried out by implementing monitoring of pain characteristics and teaching non-pharmacological deep breathing relaxation techniques. Providing deep breathing relaxation techniques can reduce tension, increase physical and emotional relaxation.

Deep breathing relaxation is responded to by the brain through the cerebral cortex and then sent to the hypothalamus and then stimulates the pituitary gland to notify the adrenal medulla. The pituitary gland produces the hormone endorphin as a neurotransmitter which can influence the mood to relax and reduce pain [8]. After being given the implementation, Mrs. DJ said she was more relaxed and felt less pain with a pain scale of 1 (NRS), the pain was felt only when urinating so that the problem of acute pain was partially resolved.

Impaired Skin/Tissue Integrity

This diagnosis was made because the patient experienced *grade 1 perineal rupture* and was *hectated* . Wounds on the body provide opportunities for bacteria to enter and increase the risk of infection. If the stitched wound is not cared for properly in damp conditions of the genitalia. So good wound care is needed.

The interventions provided include monitoring wounds, monitoring signs of infection such as an increase in the patient's temperature and monitoring laboratory results after delivery. Laboratory results after childbirth Mrs. DJ, namely leukocytes 9.50 x 10^3/mm^3 and hemoglobin 10.4 gr/dL.

Treatment carried out to reduce the risk of infection is by maintaining *aseptic technique* for the patient and introducing the patient to the signs of infection. Factors that can influence healing time are that mothers must know how to maintain the condition of the wound, the color of the wound, increased pain and the appearance of fever [19]. After the intervention was carried out, it was found that there were no signs of infection in Mrs. DJ.

V. CONCLUSION

Based on the results of the case study, the author concluded several things as follows, namely the problem of risk of injury to the fetus was partially resolved, the problem of labor pain was partially resolved, the problem of anxiety was resolved, the problem of risk of bleeding was resolved, the problem of ineffective breastfeeding was partially resolved, the problem of damage to skin/tissue integrity was partially resolved.

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