RESEARCH PAPER

Epidural Anesthesia Using 0.3% Levobupivacaine in Caesarean Section with Hyperthyroid Comorbidity and Impending Thyroid Storm: A Case Report.

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Abstract

Thyroid abnormalities in pregnancy are the second most common endocrine disorder and can significantly complicate surgery and postoperative recovery. Hyperthyroidism in pregnancy is estimated to account for 85%–95% of clinically significant cases, most commonly caused by Graves' disease. Hyperthyroid patients carry a special surgical risk: thyroid storm, occurring in 2%–4% of pregnant patients with hyperthyroidism. We report a 24-year-old primigravida at 33 weeks gestation with hyperthyroidism who developed a thyroid storm and underwent emergency caesarean section under epidural anesthesia in the setting of impending thyroid storm. Epidural anesthesia with levobupivacaine 0.3% was chosen given a history of heart failure Stage C FC II–III and high-dose propranolol use, to avoid excessive post-spinal hypotension. This case highlights the importance of careful anesthetic selection and perioperative optimization in high-risk obstetric patients.

Categories: Anesthesiology, Obstetrics, Endocrinology, Intensive Care

Keywords: thyroid storm, sectio caesarea, epidural anesthesia, levobupivacaine, heart failure, hyperthyroidism, pregnancy

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INTRODUCTION

Physiological changes in pregnancy contribute to fluctuations in thyroid hormone levels. An increase in circulating estrogen during pregnancy will cause a 50% increase in thyroxine-binding globulin (TBG). Thyroxine will bind to circulating T4, thus causing a decrease in free T4 levels. To compensate for this condition, the thyroid will be more active in terms of size and will increase the production of T4 and T3 by 50%. Due to the homology between TSH and human chorionic gonadotropin (hCG), increased hCG levels in the first trimester lead to thyroid stimulation, leading to further increases in free T4. HCG levels peak between 8 to 12 weeks of pregnancy and gradually decline thereafter. [1]

Thyroid abnormalities in pregnancy are the second most common endocrine abnormalities and it is known that thyroid dysfunction can result in adverse effects for both the mother and the fetus. [2]

Thyroid disease will involve TRAbs that bind to TSH receptors and impact the production of thyroid hormones. These antibodies can be stimulating or inhibitory. In Grave's disease, TRAbs is stimulating, causing a pathological increase in free T4 and causing hyperthyroid conditions.[3] Hyperthyroidism in pregnancy that requires treatment is most often caused by Grave's disease, which is estimated to account for 85% to 95% of clinically significant cases of hyperthyroidism. [4]

Quite a lot of the prevalence of patients with thyroid dysfunction. Thyroid hormones have many influences on the body's systems, the effects of thyroid dysfunction are very diverse and can significantly complicate surgical procedures and postoperative recovery. [5]

Hyperthyroid patients have a special risk in the course of surgery, namely the occurrence of thyroid storm. This condition can be exacerbated by several conditions including anesthesia, surgery, bleeding, pregnancy, and childbirth (both normal births and by caesarean section). Thyroid storm occurs in 2% to 4% of pregnant patients with hyperthyroidism. [6]

Adequate preoperative preparations must be made to minimize the risk of perioerative thyroid storms. Surgery should be postponed until euthyroid patients if possible. Anesthesiologists should prepare themselves to manage perioerative thyroid storms. [7]

CASE PRESENTATION

The patient was named Mrs. Erni Purwalistyowati, a 24-year-old woman who works in the private sector. The patient weighed 57 kg and was recorded with an RMK 01433415.

The patient came alone with the main complaint of a tight stomach since 8 hours before entering the hospital. The patient admitted that she was 8 months pregnant and did not experience blood mucus or amniotic fluid discharge. Fetal movement is active. The patient reported a history of vaginal discharge from 2 weeks earlier which was accompanied by itching but without odor. Complaints of pain during urination, trauma, and abdominal massage are denied.

In addition, patients complained of heart palpitations from 2 days before admission to the hospital, while complaints of tightness, tremors, fever, and nausea and vomiting were denied. The patient had a history of hyperthyroidism since 2020 with PTU therapy 3x200 mg and Propanolol 2x10 mg, but discontinued treatment since January 2024. In October 2023, the patient was treated with a diagnosis of Hyperthyroid on Treatment + HF Std C FC II-III. A history of diabetes mellitus, hypertension, and a family history of asthma, hypertension, and diabetes mellitus are disclosed.

Physical examination prior to surgery showed airway clear conditions, spontaneous breathing with RR 30 x/min, and SpO2 99% using 3 lpm nasal cannula without retraction. Blood pressure 148/100 mmHg, pulse 134 x/min with regular rhythm, positive murmur, no gallop, and CRT < 2 seconds. GCS E4 V5 M6, 3 mm isochord pupil, positive light reflex. Spontaneous urination with clear yellow urine. Flat abdomen without distension, positive bowel noise, negative muscular defanization, negative pressing pain, and visible lumps on the left thigh fold. Body weight 57 kg, height 158 cm, BMI 19.2 (normal), temperature 37.2°C, warm acre, no edema, and motor 5/5/5/5.

An ECG examination on April 15, 2024 showed sinus rhythm with a pulse of 112 times/minute with no heart rhythm abnormalities.

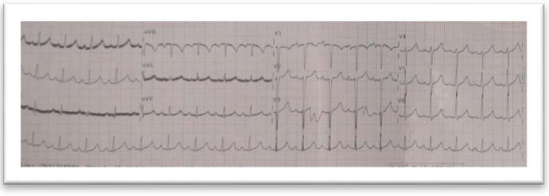

FIGURE 1: Patient ECG

The results of the laboratory examination on April 16, 2024, were obtained as shown in the table below:

TABLE 1: Laboratory Rolsaam Results

INSPECTION	RESULTS	INSPECTION	RESULTS
Hemoglobin	13,6 g/dl	**Albumin**	3,6 g/dl
Leukosit	19.900/ul	**OT/PT**	26/14 U/L
Thrombositis	87,000/ul	**Your/Cr**	32/0.67 mg/dL
Hematocrit	40,7	**Sodium**	130 Meq/L
PT/APTT	9.7/29.2 seconds	**Potassium**	4.5 Meq/L
GDS	122 mg/dl	**Chlorida**	100 Meq/L
FT4	30.84 pmol/l	**TSHs**	0.0014 IU/ml

Prior to stabilization, the patient had a history of Thyroid Storm with a BW Score of >45 (Thyroid Storm). At the time of surgery, the patient's BW Score was 40 (Impending Thyroid Storm).

	Point
Termometer (F)	
- 99.0 – 99.9	5
- 100.0 – 100.9	10
- 101.0 – 101.9	15
- 102.0 – 102.9	20
- 103.0 – 103.9	25
- ≥ 104.0	30
Cardiovaskular	
- 100 – 109	5
- 110 – 119	10
- 120 – 129	15
- 130 – 139	20
- ≥ 140	25

	Point
Atrial fibrilation	
-Absent	0
-Present	10
Congestive heart failure	
-Absent	0
-mild	5
-moderate	10
-Severe	20
	Point
Gastrointestinal- hepatic dysfunction	
- Absent	0
- Moderate (diare, abdominal pain, nause/ vomiting)	10
- Severe (jaundice)	20
Central nervus system dystrubance	
- Absent	0
- Mild (agitation)	10
- Moderate (delirium, psycosis,letargi)	20
- Severe (seizure, coma)	30
Precipitant hystory	
- Negative	0
- Positive	10

FIGURE 2: Patient's BW Score Prior to Surgery

On the first day of treatment, the patient was diagnosed with G1P0A0 H 32-33 weeks + JTHIU + Letsu + Thyroid Storm Unlikely (BW Score 20) + PEB + PPI + Hyperthyroid on treatment (since 2020) + HF Stg C FC II-III + Flour Albus + Thrombocytopenia (Thromb 140,000/ul) + Abnormal CTG category II + TBJ 1705 gr so that the patient .

On the sixth day of treatment, the patient worsened and was transferred to the ICU for stabilization and management of thyroid storm by an internal medicine colleague. After stabilization, the obgyn colleagues will re-evaluate the possibility of termination of the abdominam with post SC backup ICU. After re-evaluation, based on the consideration: inpartus, latitude and fetal tachycardia, the patient is consulted to the anesthesia department for SC childbirth assistance with treatment in the ICU post SC. The patient was consulted to the anesthesia department with a diagnosis with G1P0A0 H 33 mgg + JTHIU + Letsu + Inpartu Kala I Latent Phase + PEB + Hyperthyroid with Impending Thyroid Storm (BW Score 40) + Hyperthyroid Heart Disease (HF Stg C FC II-III) + Flour Albus + Thrombocytopenia (140,000) + Fetal Tachycardia + TBJ 1705 gr

When consulted to the anesthesia department, the patient is diagnosed with Hyperthiroid with Impending Thyroid Storm. The patient was concluded with physical status ASA III E, with medical problems Pregnancy with Hyperthyroid with Impending Thyroid Storm (BW Score 40), Hyperthyroid Heart Disease (HF Stg C FC II-III), Thrombocytopenia and Hyponatremia.

Potential problems in these patients:

B1: Risk of hypoxia, dessaturation, total spinal

block

B2: Risk of bleeding, hemodynamic disorders, total spinal block

B3: Risk of infection, low back pain

B4: Decreased risk of renal perfusion, urinary retention

B5: Risk of interference

B6: Risk of low back pain

Previously, the patient was treated in the ICU for stabilization and management of thyroid storm by internal medicine colleagues. After a re-evaluation, based on the considerations: inpartus, latitude and fetal tachycardy, the patient is consulted to the anesthesia department for SC delivery. The patient was consulted to the anesthesia department with laboratory examination results in the form of PT/APTT 9.7/29.2 seconds and INR 0.89 with actual problems, impending thyroid storm, thrombocytopenia (87,000), and hyponatremia (130).

The patient is fasted 6 hours before the anesthesia procedure. An explanation was given about the patient's current condition, anesthesia procedures and complications to be faced and handled, the possibility of changing the action to general anesthesia, and the signing of an informed consent approval for anesthesia by the patient's family.

The patient is received from the room in the patient reception room, after being changed into sterile clothes the patient is taken to the operating room. Before the anesthesia action was carried out, a vital sign examination was carried out on the patient, a pulse of 120 times/minute was obtained with regular lifting strength, tension of 125/80 mmHg with 99% saturation. Administered 3 lpm nasal cannula oxygen supplementation.

Epidural Anesthesia Induction uses levobupivakain 0.3% as much as 15cc in a sitting position. The patient is put to sleep, after which he waits ± 5 minutes for the onset of the drug to work while pulse touching is carried out. Then an examination of the height of the spinal block level was carried out with a pin prick test and it was found that the height of the spinal block level was as high as T6, also assessed for the patient's motor function and it was found that the patient's ankles were still movable, but heavy to move at the knee joint. Then the patient is placed in the supine position and draping is carried out. The action lasts for 105 minutes from induction to completion. During the process of acting on the patient's vital signs is stable, systolic blood pressure is 142-148 mmHg, diastolic blood pressure 83-91 mmHg, pulse frequency 115 – 120 times/minute, breathing frequency 18 – 20 times/minute and oxygen saturation of 100% with nasal cannula of 3 lpm, no complaints of nausea/vomiting, headache or decreased consciousness.

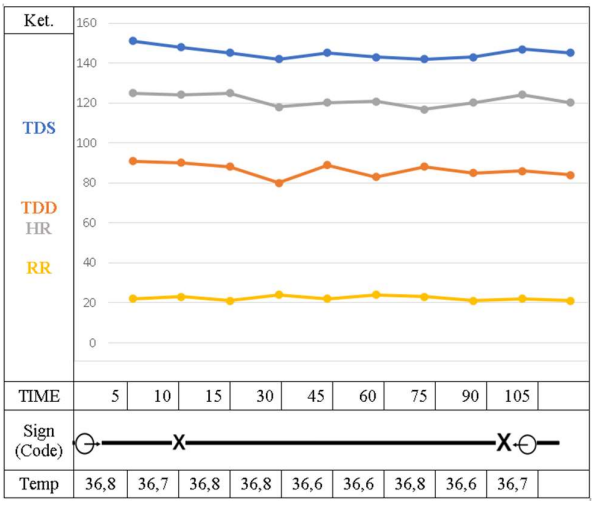

FIGURE 3: Intraoperative Chart

After observation in the recovery room ± 30 minutes, the patient was transferred to the ICU with mentis compost awareness, blood pressure 130/80 mmHg, pulse rate 110 times/minute, breathing rate 22 times/minute, temperature 36.3 and oxygen saturation 100%. After the procedure, the patient had no complaints of pain (NRS 0/10), no nausea, no vomiting, no headache complaints, both legs could be moved in both ankles, both knees could move but were not strong (Bromage score 1).

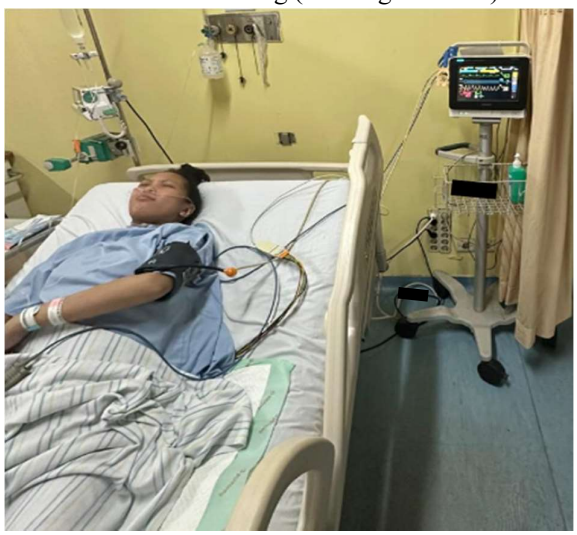

FIGURE 4: Postoperative Patient Condition

Discussion

A case has been reported of a 24-year-old woman, with a primary diagnosis of G1P0A0 preterm gravid at 33 weeks with a secondary diagnosis of hyperthyroidism. The patient had a history of hyperthyroidism and came to Ulin Hospital with severe complaints accompanied by heart palpitations. On the sixth day of treatment, the patient worsened and was transferred to the ICU for stabilization and management of thyroid storms.

On the seventh day of treatment, on the indication of inpartus, latitude and fetal tachycardia, the patient was terminated by emergency SC.

Based on a study by Quin*et al*. (2012), it is known that primigravida has a higher risk of experiencing cesarean delivery, so in this study it was found that a higher incidence of cesarean section was found in the primigravida group. [8] Based on research by Singh et al. (2020), the most common indications of childbirth in emergency conditions are the presence of fetal emergencies (62%) and a previous history of SC (19%). Fetal malnutrition has a reported global prevalence of around 20%. [9] Fetal emergencies account for about 16% of caesarean sections in tertiary-level hospitals in Bangladesh. [10] Based on research by Ali*et al*. (2005), malpresentation is an indication in 25% of emergency surgery and 13% of elective surgery. [11]

Hyperthyroidism is a condition characterized by increased levels of circulating thyroid hormones, T4 and T3, as well as decreased levels of thyroid-stimulating hormone (TSH). [12] Hypertiorids complicate about 0.1% to 0.4% of pregnancy. This condition usually requires medical management. [1] Hyperthyroidism in pregnancies that require treatment is most often caused by Grave's disease, which is estimated to account for 85% to 95% of clinically significant cases of hyperthyroidism. [4Thyroid abnormalities in pregnancy are the second most common endocrine abnormalities and it is known that thyroid dysfunction can result in adverse effects for both mother and fetus. [2] Hyperthyroid patients have a special risk in the surgical procedure, i.e. the occurrence of thyroid storm. Thyroid storm occurs in 2% to 4% of pregnant patients with hyperthyroidism. [6]

Thyroid storm is a severe complication in pregnant women with uncontrolled hyperthyroidism. Thyroid storm is a very rare and life-threatening emergency that may occur in women with severe hyperthyroidism that is untreated or undiagnosed. [13] It is characterized by changes in mental status, hyperthermia, increased pulse pressure, tachycardia, left ventricular dysfunction, and multi-organ failure. [13]

The mechanism of thyroid storm is still unknown. Some theories have linked this condition to increased secretion and circulation of thyroid hormones. Catecholamine secretion may also play a role in the occurrence of thyroid storms. In most cases, thyroid storms are associated with the presence of trigger events (severe physical or mental stress) in patients with uncontrolled or poorly managed hyperthyroidism. Thyroid storm can be exacerbated by several conditions including anesthesia, surgery, bleeding, pregnancy, childbirth (both normal birth and by cesarean section), trauma, teriodinized contrast agents, therapy with iodide 131I, emotional stress, pulmonary embolism, stroke, infection, diabetic ketoacidosis, hypoglycemia, congestive heart failure, and intestinal infarction. [14] Patients have several risk factors that can be a trigger for thyroid storms.

On the sixth day of treatment, the patient experienced a thyroid storm and was transferred to the ICU and given stabilization therapy by a disease colleague in the endocrine division with propylthiouracil (PTU) 200 mg/6 hours, lugol 6 drops/6 hours (given 1 hour after PTU), and Propanolol 40 mg/6 hours and planned SC Cito surgery. At the time of surgery, the patient was in a hyperthyroid condition with an impending thyroid storm (BW Score 40). Based on the theory, thyroid storm management should be carried out in the intensive care unit (ICU) with continuous monitoring of the heart and fetus involving endocrinologists and obstetrician-gynecologists. Immediate treatment with thioamides such as propylthiouracil (PTU) and methimazole can immediately inhibit the synthesis of thyroid hormones de novo. [15]

PTU is the drug of choice for the early management of thyroid storm in pregnancy regardless of the trimester of pregnancy. PTU works by inhibiting type 1 deiodinase so that there is a decrease in peripheral conversion of T4 to T3. PTU is given in an enteral loading dose of 600-1000 mg followed by 200-250 mg every 4 hours. Methimazole may be administered orally at a dose of 20 mg every 6 hours if PTU is contraindicated. [16]

Iodine will induce the Wolff-Chaikoff effect, which is a temporary inhibiting effect of iodine organizing and releasing thyroid hormones. Iodine should be administered at least one hour after thioamide to avoid the Jod-Basedow effect of increased T4 formation and release. [17] The solution used was Saturated Solution of Potassium Iodide (SSKI) as much as 5 drops or 250 mg every 6-8 hours and lugol iodine as much as 10 drops or 0.5 mL every 8 hours. Lugol iodine may also be added to intravenous fluids for patients who cannot take the drug orally. [18,19]

Treatment with beta blockers should be done immediately in order to control the signs/symptoms associated with hyperadrenergic states such as tachyarrhythmia, hypertension, and hyperpyrexia. Beta blockers should be used with caution in patients with reactive airway disease or peripheral vascular disease. Pregnant patients are at a higher risk for the development of congestive heart failure. Therefore, beta blockers should be used with caution. [15] Propranolol is a non-

selective beta blocker that can be administered enterally (60-80 mg every 4-6 hours) or intravenously (1 mg for 10 minutes IV) if there is no risk of cardiac dysfunction. It is recommended by the American Thyroid Association because at high doses it will be able to inhibit the conversion of peripheral T4 to T3 through type 1 deiodinase inhibition. Propanolol has an action duration of 6-12 hours. The drug is contraindicated in patients with reactive airway diseases such as asthma. [20,21]

The risk of thyroid storm in the perioperative period can be minimized with appropriate preparation. The preoperative therapeutic goal is to inhibit the synthesis and secretion of thyroid hormones in patients who already have a history of hyperthyroidism and to reduce the vascularity of the thyroid gland. In the preoperative period, the main therapy given is more or less the same, i.e. it provides antithyroids (especially PTUs), beta-adrenergic receptor antagonists, glucocorticoids, and iodine. Patients with ecsoftalmus should receive treatment to protect the eyes and prevent corneal abrasion, especially if general anesthesia is performed. Women with hyperthyroidism should receive glucocorticoid supplementation because they have relative deficiencies than glucocorticoid deposits. There have been no prospective randomized studies that have compared the effectiveness of different methods for preoperative preparation in patients with hyperthyroidism. A possible clinical approach is to administer multiple therapeutic agents as previously described. The dose given is a titration dose by paying attention to the clinical response of each patient. Clinical parameters to be considered include exercise-induced pulse, subtle tremors, weight gain and recovery of muscle strength. [6,22] In cases that require emergency surgery, the doctor should use therapies for thyroid storms. [22] Anesthesiologists should prepare to manage perioerative thyroid storms. [6,7]

Based on the criteria of the Critical Care Minimal Data Set (CCMDS), patients with hyperthyroidism undergoing surgery require a level 2 level of care, which requires preoperative optimization and support of one organ system in the postoperative phase (cardiovascular system). [24]

In this patient, anesthesia techniques were performed using the epidural technique. With regard to anesthesia techniques, there are still no prospective randomized studies that have evaluated the effectiveness and safety of various anesthesia techniques in patients with hyperthyroidism. The selection of general anesthesia as well as neuraxial techniques can be used safely based on the patient's individual condition. Conditions that are the basis for consideration are the presence of airway abnormalities and their degrees, cardiovascular conditions and electrolyte disorders. Sannaboraiah, et al. (2014) stated that in general, the recommended anesthesia approach to abdominal surgery for patients with uncontrolled hyperthyroidism is a combination of general anesthesia and regional techniques. In addition, it was also stated that regional techniques, namely both spinal techniques and epidural techniques, can be an option for urgent surgical procedures such as laparotomy and SC. [2] Datta, et al. (2010) stated that regional anesthesia, especially spinal anesthesia can be avoided, especially in caesarean section if the mother takes high doses of propanolol, this aims to avoid post-spinal excessive hypotension. [25In addition, this patient has a history of HF Stg C FC II-III so spinal anesthesia is not an option. Dahl, et al. (2009) stated that the epidural technique in childbirth provides advantages in terms of patient preparation. Spinal anesthesia can be an option if performed by a skilled anesthesiologist, so it can be performed as quickly as general anesthesia with a very low failure rate. The spinal/epidural combination may also have advantages, especially in high-risk heart patients, but this technique is more time-consuming. General anesthesia still seems to be the method of choice for most anesthesiologists in very urgent conditions with the main risk being the risk of respiratory failure due to intubation difficulties. [26] In these patients, to prevent significant hemodynamic impairment, epidural anesthesia with a 0.3% levobupivacain regimen was used to prevent more minimal hemodynamic decline. Reduction of the concentration of local anesthesia can reduce preload and afterload, but the sympatholytic effect due to local anesthesia is much reduced, so the vasodilation effect is also reduced.

In this patient, epidural anesthesia induction was carried out using levobupivacaine 0.3% as much as 15cc in a sitting position. The use of levobupivacaine causes less cardiac depression than bupivacaine and ropivacaine. Symptoms of central nervous system toxicity in bupivacaine were higher on average at 56.1 mg compared to levobupivacaine at 47.1 mg. Levobupivacaine can be used for subarachnoid, epidural, brachial plexus block, supra and infra clavicle blocks, intercostal and interscalal blocks, peripheral nerve blocks, peribulber and retrobulber blocks, local infiltration, obstetric analgesics, postoperative pain management, acute and chronic pain management. [27] Levobupivacain as a local anesthetic agent is long-acting. Its use in epidural anesthesia in addition to providing excellent analgesia, epidural

blockade also dulls the neuroendocrine stress response associated with surgery, decreases postoperative morbidity, weakens catabolism, and accelerates functional postoperative recovery.

Based on a study by Ahmed et al. (2018), VAS was significantly lower in patients with levobupivacaine concentrations of 0.25% and 0.125% than 0.0625% administered epidurally. Motor blocks in the form of Bromage score 1 were found in 43% of mothers who received levobupivacaine 0.25% and no motor blocks were found in the concentration groups of 0.125% and 0.0625%. [28]

The use of levobupivacain in clinical practice can generally reach concentrations of 0.25%-0.5% for the facilitation of surgery. In most cases, the use of local anesthetic drugs at low concentrations is able to produce blocks in the nociceptive fibers (Að and C) with minimal even no effect on the larger diameter motor and tactile fibers. [29] In this case, the epidural regimen levobupivacain 0.3% was used with the aim of maintaining hemodynamic stability, because in this patient it is very susceptible to vasodilation effects due to a sudden decrease in large intraabdominal mass pressure due to a decrease in uterine volume and the birth of the baby. The levobupivacain 0.3% regimen was chosen because of the hemodynamic variation caused by it is more minimal, gradual, and controlled when administered in conjunction with appropriate intravenous fluid administration, and can also provide an adequate analgesic effect and reduce the need for intravenous opioids.

The purpose of premediation in hyperthyroid patients is to relieve anxiety and prevent the activation of the sympathetic nervous system. Benzodiazepines such as oral diazepam (5 to 10 mg) or central adrenergic blockers such as clonidine (3 to 5 μg/kg per oral) may be administered. Antimuscarinics such as atropine and scopolamine are not recommended, as they cause tachycardia and affect heat regulation. However, the routine implementation of this technique is not recommended for pregnant women due to the risk of maternal aspirations and neonatal depression. [30]

In intraoperative administration in patients with a history of hyperthyroidism, cardiovascular function and body temperature must be closely monitored. Hyperthyroid patients who are not well treated will be able to develop chronic hypovolemia and are prone to excessive hypotensive responses during anesthesia induction. [31] In this case, the patient's vital signs during the action process were observed to be stable, systolic blood pressure of 142-148 mmHg, diastolic blood pressure 83-91 mmHg, pulse frequency 115-120 times/minute, breathing frequency 18-20 times/minute and oxygen saturation of 100% with a nasal cannula of 3 lpm, no complaints of nausea/vomiting, headache or decreased consciousness.

After observation in the recovery room ± 30 minutes, the patient was transferred to the ICU with mentis compost awareness, blood pressure 130/80 mmHg, pulse rate 110 times/minute, breathing rate 22 times/minute, temperature 36.3 and oxygen saturation 100%. After the procedure, the patient had no complaints of pain (NRS 0/10), no nausea, no vomiting, no headache complaints, both legs could be moved in both ankles, both knees could move but were not strong (Bromage score 1). Patients received enteral medications, namely PTU 200 mg/6 hours, propanolol 40 mg/8 hours, nifedipine 30 mg/24 hours, and methyldopa 500 mg/8 hours. In addition, patients were also given parenteral medications, namely morphine o.5 mg in NS 6 cc/ 12 hours, dexamethasone 0.5 mg/ 8 hours, ceftriaxone 1 gram/12 hours, ranitidine, paracetamol 1 gram/8 hours, furosemide 20 mg in the morning and noon, tranexamic acid 500 mg/ 8 hours and oxytocin drip 20IU in 500 cc NaCl 0.9%.

In the postoperative phase, there is the most serious threat in patients with hyperthyroidism undergoing surgery, namely the threat of thyroid storm which is characterized by hyperpyrexia, tachycardia, changes in consciousness (such as agitation, delirium, coma), and hypotension. The onset of thyroid storm is generally 6 to 24 hours after surgery. [24]

The patient also has a history of Heart Failure Stg C FC II-III. In the early stages, hyperthyroidism can lead to increased cardiac output and left ventricular hypertrophy, while in the later stages it can lead to biventricular dilatation and congestive heart failure. The presence of atrial fibrillation and pulmonary arterial hypertension also adds to the morbidity of hyperthyroidism that does not receive treatment. [32] In a retrospective study by Selmer et al. (2014), showing a significant association between subclinical hyperthyroidism and all causes of death and cardiovascular accident, it was found that heart failure was the leading cause of increased major adverse cardiovascular accidents. [33As in the case, the patient has a history of heart failure which is the result of uncontrolled hyperthyroidism in the patient. The patient received therapy from a cardiologist colleague in the form of 20mg Furosemide injection.

Heart failure is a high-risk disease with considerable perioperative morbidity and mortality that demonstrates the need for careful assessment, optimization, and anesthesia planning for patients undergoing cardiac or noncardiac surgery. When

there is evidence of acute heart failure in patients treated for emergency surgery, the procedure should be delayed whenever possible until cardiac function is compensated and hemodynamic stability is achieved. In this case, due to the enormous risk of delaying the surgical procedure, the surgery is still carried out as soon as possible. [34]

Conclusion

A case of epidural anesthesia with levobupivacaine has been reported in patients with a history of heart failure stage C FC II-III who underwent sectio caesarea with comorbid hyperthyroid with impending thyroid storm on treatment.

Epidural anesthesia using levobupivacaine 0.3% as much as 15 cc is an option that can be used in patients with a history of heart failure stage C FC II-III with comorbid hyperthyroidism with impending thyroid storm on treatment. This technique considers the advantages to the output of the action and its conditions. This technique can produce good quality epidural anesthesia, with minimal systemic side effects and maintain stable hemodynamics and reduce the need for early postoperative analgesic supplementation, as well as early mobilization and short treatment duration.

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