

Anaesthesia management on pregnancy with co-morbid asthma undergoing non-obstetric surgery



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ABSTRACT

In the pregnancy process, there is a significant physiological change in the mother. Physiological changes, pre-pregnancy conditions, or those that arise during the pregnancy process will affect the delivery outcome. Also, it turns out that the presence of this preexisting condition will affect the outcome process, especially the anaesthetic technique used,

the chosen anaesthetic technique is determined based on the age of the pregnancy, surgical procedures to be performed, surgery site, and overall patient condition. Whatever technique is selected, it must use the right method based on clinical decisions and accordingly to the existing guidelines. This condition is a challenge for an anesthesiologist.

Keywords: pregnancy, asthma, co-existing disease, challenges, anaesthesia

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INTRODUCTION

Asthma is a reversible obstructive airway disease characterized by bronchial hyperactivity, bronchoconstriction and chronic inflammation of the airways. Asthma is one of the common comorbid accompaniments in pregnancy. Exposure to genes and the surrounding environment plays a role and triggers and even aggravates asthma conditions in pregnancy.^{1,2}

Effects of asthma as a comorbid to pregnancy: 1) Physiological respiratory changes occur, include: decreased functional residual capacity (FRC), increased minute ventilation and oxygen consumption, elevation of the diaphragm muscle due to gravid uterine urge. 2) All pregnant women who have previously had asthma will experience recurrence, especially the second trimester of pregnancy, can be caused by viral infections and medication. 3) Approximately 20-30% of pregnancies with asthma experience improvement in severity. The other 30% did not experience improvement in their severity. 4) Exacerbation of asthma in labour is an unusual event 5) Most postpartum patients will have the same asthma severity as consultations.²

CASE PRESENTATION

A 36 years old woman, 73 kg, 164 cm, with 16 weeks of pregnancy was diagnosed with a closed fracture of the right clavicle and mild persistent asthma. She was planned to undergo open reduction and internal fixation (ORIF) of

miniplate in her clavicle. She has no complaints of shortness of breath or coughing up blood after the event. Upon examination, she had no complaints of lower abdominal pain and vaginal bleeding. She has a history of asthma since childhood, and her last asthma attack was the morning before the accident. She had three attacks in the last month, which mostly triggered by dust exposure and acute respiratory infections.

On physical examination, we noted hematoma and deformity in the right supraclavicular area, breathing appears symmetrical, with a breathing rate of 20 times per minute. The sound of the two lung fields is the same; no wheezing sound is found. At the obstetric-gynaecological evaluation of a normal pregnancy at 16 weeks of age, retroplacental bleeding did not appear.

During perioperative preparation, we administered nebulization with ipratropium bromide, 6 litres per minute by a simple mask, dexamethasone 10 mg IV and midazolam 5 mg IV for sedation. We chose the peripheral nerve block technique for this case: a superficial cervical right plexus block combined with a right interscalene block with landmark guidance and superficial ultrasonography. The local anaesthetic used was 10 ml 2% lidocaine with 10 ml of 0.5% bupivacaine. We maintained sedation during the surgery by giving propofol by targeted controlled infusion (TCI) concentration of 0.5 µg/mL/minute. The surgery ran for 97 minutes and was uneventful.

The patient was transferred back to the ward and was given fentanyl 400 µg/24 hours intravenously

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and paracetamol 500 mg every 6 hours orally for three days. She was discharged on the 4th day after the surgery and experienced no complications.

DISCUSSION

In most cases, the time frame for the preoperative anaesthetic intervention is short, so the anaesthetist should assess the severity of the disease quickly and see whether an acute attack is occurring.⁴ A thorough examination is required, including asthma symptoms, physical examination, and spirometry. A complete blood count, arterial blood gas, and chest x-ray also are also needed.^{1,2,5} Chest physiotherapy, antibiotic, and bronchodilator therapy during the perioperative period can often improve reversible components of asthma.⁵

The principle of perioperative anaesthesia in pregnancy with complications of asthma who will undergo an obstetric surgery procedure is to guarantee the oxygenation of the mother and baby during an asthma attack. Carry out comprehensive management including objective assessment, prevent triggers (allergens such as dust, mould, animal hair, cigarette smoke, infections), supervise the function of respiration, administer anaesthesia, and educate. In conditions after an asthma attack, bronchial hyperactivity is a risk factor for the occurrence of potentially life-threatening bronchospasm.^{1,9,10}

Management of general anaesthesia in this case, both with and without tracheal intubation is at risk for airway obstruction. Instrumentation on the airway will trigger bronchospasm due to the stimulus to the parasympathetic system. If the management of general anaesthesia is chosen, consider the use of bronchodilator drugs such as propofol, ketamine, and thiopental. Administration of intravenous lidocaine can also blunt the airway reflex response. As well as giving intravenous corticosteroids and B2-agonists, extubation must be done when the patient is fully conscious.^{4,8}

So, in this case, the regional technique of anaesthesia was chosen with the superficial cervical right plexus block approach combined with a right interscalene block with landmark guidance and superficial ultrasonography.^{1,7}

CONCLUSION

The anaesthetic technique can be one of the triggers of asthma, so it is essential to know the pathophysiology of asthma. It is strongly recommended this cases of pregnancy with asthma comorbidities,

would be better to avoid treatment with general anaesthesia, and regional anaesthesia is considered to be the choice, especially when it comes to post-operative complications. However, the determination of anaesthesia techniques in pregnant patients must still consider the type of surgery, the period of gestation, the site of surgery, general condition of the patient and so on.

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