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ANAESTHETIC MANAGEMENT IN A PARTURIENT WITH VARICELLA ZOSTER VIRUS INFECTION PRESENTING FOR EMERGENCY CAESAREAN SECTION: CASE REPORT

Anaesthesiology

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ABSTRACT

Incidence of varicella in pregnancy is 1-5 cases/1000 pregnancies. Varicella is usually a benign illness but it is associated with significant morbidity and mortality. Varicella (chicken pox) infection is associated with a significant risk of maternal and fetal morbidity and mortality. There is an increased risk of maternal complications especially pneumonia in third trimester which is the most serious complication following varicella. The choice between central neuraxial and general anaesthesia in such cases is debatable. The diagnosis of chickenpox is performed on the basis of clinical history with classical signs and symptoms. It is a mild, self-limiting disease in children but severe complications like pneumonia, hepatitis, meningitis, encephalitis and bleeding diathesis can occur in adult and immuno-compromised persons.

KEYWORDS

Anaesthesia, Cesarean Section, Pregnancy, Varicella zoster.

INTRODUCTION:

Varicella zoster virus (VZV), a DNA virus belonging to the herpes virus family, causes a primary contagious and usually benign illness commonly known as varicella or chickenpox. The virus can also lie dormant in the dorsal root ganglia and may be reactivated and result in localized cutaneous eruptions called 'herpes zoster' ('shingles'). The lifetime risk of VZV infection is about 95% [1]. About 5–10% of pregnant women lack antibodies to VZV and may acquire varicella during pregnancy [2]. Although only about 2% of all cases occur in adulthood, they account for 25% of all VZV-related deaths [3]. Varicella pneumonia is 25 times more common in adults [4]. The consequences of primary VZV in pregnancy for the mother and for the fetus vary with the period of gestation. The risk of adverse effects for the mother is greatest in the third trimester, whereas for the foetus the risk is greatest in the first and second trimesters [5].

Varicella causes an acute and highly contagious disease-chickenpox, which is mildly self-limiting in childhood but associated with severe complications in adult and immune-compromised persons. Associated complications include secondary bacterial superinfection of skin generally by *Streptococcus pyogenes* or *Staphylococcus aureus*. *Varicella pneumonia* being the most common complication following infection, other complications include myocarditis, corneal lesions, nephritis, arthritis, bleeding diathesis, acute glomerulonephritis and hepatitis in adults.[6] Skin lesions, neurological and eye defect, IUGR, hypoplasia and developmental delay can be due to direct viral damage during development in congenital varicella syndrome. [7]

Maternal varicella has several implications for the anesthetist. Spinal or epidural block may expose CNS system to the virus with resultant meningitis or encephalitis, camann and toumala advised against regional block for at least 14 days after varicella symptoms.[8] However, regional anesthesia has been the choice in a pregnant patient with acute varicella instead of GA because of the risk of pneumonia.[9] Also, spinal anesthesia has been used safely in a parturient with human immunodeficiency virus (HIV) infection.[10] Brown et al. suggested that the use of a blunt tip needle instead of a sharp tip needle may reduce the risk of introduction of viral material into the CNS.[11]

Case Report:

27-year-old patient primigravida with 36- weeks' pregnancy was admitted on 8th august 2023. She was diagnosed to be suffering from varicella zoster (chickenpox) infection 10 days prior to admission to hospital for which she was on treatment Tab Acyclovir 800mg 5 times a day. She had not been previously immunized and did not give a history of exposure to varicella.

On admission, she was afebrile, pulse rate was 82 beats per minute, blood pressure 120/80 mm Hg, Spo2 96% on room air. Extremities, face, trunk and abdomen were covered with lesions that were mostly crusted but in various stages of healing. Subarachnoid injection site was free of skin lesions. No oral lesions were present. Chest B/L A/E+ present. Heart sounds S1 S2 audible with no murmur. Base line investigations revealed HB-9.4mg/dl, platelet count 1.24 lacs, Blood Group= O positive, LFT, KFT and coagulogram was within normal range. Ultrasonography confirmed the presence of single live fetus of 36 weeks size. Fetal heart sounds was regular, placenta posterior wall upper segment with adequate liquor. On 9th of august in view of acute fetal distress the patient was taken for emergency cesarean section. High risk consent was taken. I.V pantoprazole 40mg and metoclopramide 10mg was given as premedication 15 minutes prior to subarachnoid block. Patient was monitored as per ASA monitoring guide lines with NIBP, HR, ECG and SPO2. As patients had received anti viral treatment and subarachnoid injection site was free of skin lesions central neuraxial block was given, by 26G sprotte needle at the L4 L5 level with 0.5% heavy bupivacaine (12.5mg). Sensory block was achieved up to T6 level. Patient underwent emergency LSCS and remained haemodynamically stable during the whole procedure. A healthy female baby was delivered with good APGAR Score with no varicella lesions. She was shifted to recovery ward and later to isolation ward for further observations. Both mother and baby were discharged on day 6 of delivery with no complications.

DISCUSSION:

Varicella is an acute and highly contagious disease caused by varicella zoster. Vesicular rashes in the sufferers are accompanied with fever and fatigue. Varicella is self limiting disease. Serious complications such as aseptic meningitis, encephalitis, transverse myelitis and Reye's syndrome appear in immunosuppressant patients. Secondary to skin lesions, bacterial infection may also develop. Other complications include myocarditis, corneal lesions, nephritis, arthritis, hemorrhagic disorder, and acute glomerulonephritis. [12]

The best anesthesia technique in varicella is controversial. Regional anesthesia may be used in viral infections such as varicella which is characterized by diffused rashes.[13] Virus may enter to central nervous system via spinal or epidural block thereby leading to meningitis or encephalitis. Camann and Taoumala has reported that regional anesthesia should be applied at least two weeks later following the onset of varicella infection.[14] In addition, in the patients with high risk pneumonia, regional anesthesia is primarily preferred in case of acute varicella .[15] Brown et al reported that in the caesarean cases with varicella infection they performed spinal anesthesia and that pencil point spinal needle application reduced the transmission of virus to the central nervous system. [16]

There are several issues in the anaesthetic management of this patient. A regional anaesthetic technique was used for two reasons, the patient's desire to be awake during the procedure, and the potential risk of varicella pneumonia. Varicella pneumonia is the most serious complication following varicella, occurring more commonly in adults than in children. It appears 3–5 days into the illness. Before the availability of antiviral therapy, 65% of parturients with VZV infections had varicella pneumonia (usually occurring in the third

trimester). With antiviral therapy this prevalence has decreased to 3.6–9%, comparable to the non-pregnant population. [17-19] The clinical manifestations of varicella pneumonia usually coincide with the pre-existence of the characteristic rash and include fever, dyspnoea, cough, pleuritic pain and haemoptysis. The characteristic chest radiographic findings are bilateral nodular infiltrates and interstitial pneumonitis, usually detected at peak severity of the rash. Gambling & Douglas recommend regional anaesthesia as the preferred choice in a parturient with an acute VZV because of the high risk of varicella pneumonia. [20] However, these recommendations are not based on randomised controlled studies or evidenced-based medicine because varicella in pregnant women is not common. Tissue coring with hollow spinal needles resulting in the spread of epithelial cells into the epidural and intrathecal spaces has been reported during epidural analgesia and lumbar puncture. [21, 22] We suggest that the pencil point needle may reduce the potential risk of introducing infective viral material into the central nervous system. It is important to stress that the spinal anaesthesia should be performed at a level where no skin lesions are present. There is a theoretical advantage in using epidural rather than spinal anaesthesia because an epidural needle does not breach the dura and theoretically would lessen the risk of introducing the virus into the central nervous system.

Despite the fact that regional anesthesia is not recommended in the patients with skin lesion, regional anesthesia may sometimes be required if general anesthesia is not plausible. Although epidural anesthesia on sites without lesions is determined to be more advantageous in such cases, spinal anesthesia is not disregarded, as well. We have preferred spinal approach in our patient, because subarachnoid block level was free of skin lesion and to avoid varicella pneumonia like complications.

CONCLUSION:

Regional anesthesia was used in this case keeping in view of risk benefit ratio of spinal anesthesia compared to general anesthesia. Spinal anesthesia can be considered a safe technique in these patients who had received antiviral treatment prior to the procedure and who have spinal anesthesia site free of skin lesions.

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