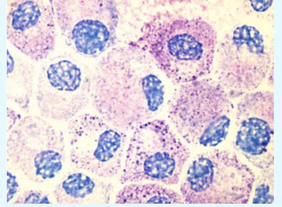
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Elective caesarean section in a parturient with mast cell activation syndrome

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Introduction

Mast cells (MCs) play critical roles in innate and adaptive immunity. MCs are derived in bone marrow, circulate and site sparsely in all tissues but preferentially those with environmental interfaces, lymphatic and vascular tissue. A certain level of mast cell activation is physiological and necessary for maintenance of homeostasis(1). Mast cells may affect function in every organ system through both mediator production and release, and inappropriate reactivity. Mast Cell activation syndrome (MCAS) presents with extreme heterogeneity due to mast cells wide range of distribution and biological activities, paired with heterogeneity in mediator expression patterns(2). This means most patients symptoms and triggers are very varied and patient specific. Diverse stimuli trigger the release of vasoactive substances and pregnant women with MCAS are at high risk for mast cell degranulation which can lead to bronchospasm, profound anaphylactoid reactions and even cardiovascular collapse.

Case Report

A 33-year-old primigravida woman, ASA III, with a diagnosis of MCAS presented for elective caesarean section at 39 weeks' gestation. Her past medical history was also notable for a diagnosis of Ehlers-Danlos syndrome, TMJ dislocation, Autism spectrum disorder with sensory processing difficulties and POTS syndrome. She reported allergic reactions to lidocaine, penicillin, salbutamol, triamcinolone, citrus, fish and eggs. Due to sensory processing difficulties the patient refused neuraxial anaesthesia and the decision was made to perform a general anaesthetic. Pre-operatively pharmacy performed a detailed medication review giving recommendations on what drugs were safe to use. The main anaesthetic concern was avoidance of mast cell mediator release. We avoided morphine, pethidine, NSAIDs, codeine, vancomycin and other histamine releasing drugs. The medication review recommended to avoid a corn excipient present in certain medications by changing preparations of certain drugs. Suxamethonium was unlikely to cause non allergic mast cell degranulation, but we avoided it because it remains a common cause of allergic anaphylaxis during anaesthesia.

Induction of anaesthesia was achieved with propofol and rocuronium. Further analgesia was provided with IV paracetamol and IV fentanyl. Meropenem and gentamicin were administered as recommended by microbiology. Dexamethasone, ondansetron and cyclizine were used for anti-emesis. Oxytocin infusion and IV tranexamic acid were commenced post-delivery. Sugammadex was used for reversal of paralysis. The caesarean section was uneventful with an estimated blood loss of 500ml. A healthy baby girl weighing 3kg was delivered. Analgesia was achieved with transverse abdominis plane blocks using bupivicaine 0.25%, regular paracetamol, and oral morphine PRN as patient had tolerated this formulation of morphine in the past. The patient was discharged on day 3 post -operatively.

Discussion

MCAS is a diverse, complex, multi-system disease and likely is quite prevalent in the obstetric population. Treatment is directed towards avoidance of identifiable triggers for mast cell degranulation, such as physical and emotional stress, extremes of temperature, mechanical irritation, alcohol or medications. A premedication regimen of H-1 and H-2 receptor antagonists and corticosteroids are recommended before invasive procedures including those requiring anaesthesia. Literature regarding MCAS in pregnancy is scarce and there is no one size fits all in terms of management. By identifying and avoiding triggers of mast cell degranulation in this obstetric population we can improve the safety and wellbeing of both mother and baby.

References

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2. Afrin LB, Bu erfield JJ, Raithel M et al. O en seen, rarely recognized: Mast cell activation on disease - A guide to diagnosis and therapeutic options. Ann Med. 2016;48(3):190–201.