ANAESTHETIC MANAGEMENT OF A PARTURIENT WITH DAO ENZYME DEFICIENCY, POSTURAL ORTHOSTATIC TACHYCARDIA SYNDROME AND JOINT HYPERMOBILITY

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INTRODUCTION

Diamine Oxidase is the main enzyme in histamine metabolism, and its deficiency occurs in 1% of the population, causing histamine intolerance. Pharmacological agents can trigger acute syndromes.
Postural orthostatic tachycardia syndrome (POTS) is characterized by chronic orthostatic intolerance and compensatory tachycardia.
In Joint hypermobility syndromes, local anaesthetic resistance is common.
We describe the anaesthetic management in a parturient suffering from a combination of the three disorders in labour.

CASE REPORT

A 34 year old G1P0 parturient presented at 39+4 weeks gestation for induction. Past medical history included DAO enzyme deficiency, POTS and joint hypermobility syndrome.

- Fluid preloading to minimise hypotension and tachycardia
- Epidural analgesia was instigated early to attenuate the stress response of labour
- Epidural insertion was uneventful.
- The epidural loading was carried out gradually, a total of 20ml bupivacaine 0.1%/ fentanyl 2 µg/ml was administered.
- PCEA was then initiated as per standard hospital protocol.
- Further boluses of 0.125% bupivacaine (ten millilitres) were required every two hours to maintain patient comfort.
- Haemodynamics were closely monitored.

A decision was taken for instrumental delivery due to slow progress in the second stage. The epidural provided effective analgesia during labour and delivery.
The patient had no evidence of haemodynamic compromise during her inpatient stay, recovery was uneventful and she was discharged home on day one post partum.

DISCUSSION

DAO enzyme deficiency implications

Histamine intolerance is characterised by hypotension, arrhythmias, airway obstruction and facial flushing. Alterations in histamine metabolism is commonly dietary but can also be secondary to pharmacological agents.

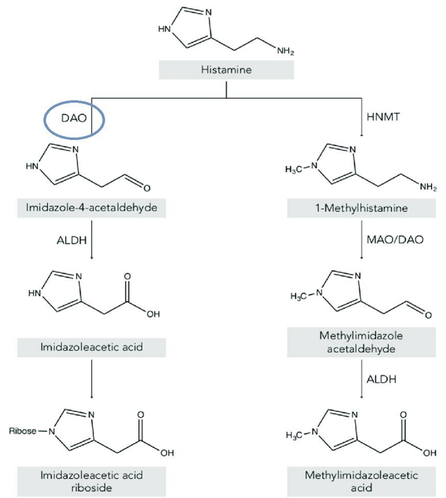


Figure 1: The metabolism of Histamine- DAO is a key enzyme

POTS Implications

In POTS, inadequate vasoconstriction and a compensatory tachycardia occurs, which can be more profound in labour due to pain and exacerbated especially in response to neuraxial technique.

Joint Hypermobility Implications

In joint hypermobility syndrome, partial or complete failure to local anaesthetic drugs is a known phenomenon. Caution with patient position due to dislocation risks.

Drug Class	Drugs to avoid	Drugs considered safe
Induction agents	Thiopentone	Propofol, Etomidate, Ketamine
Muscle relaxants	Atracurium, Pancuronium, Suxamethonium	Rocuronium,Vecuronium,
Simple analgesics	Aspirin, Diclofenac, Ibuprofen, Ketoprofen, Mefenamic Acid, Naproxen	Paracetamol
Opiates	Codeine, Morphine	Fentanyl, Remifentanil, Sufentanil, Tramadol
Antibiotics	Clavulinic Acid, Cefuroxime, Isoniazid	Other drugs considered safe
Anti-emetics	Metoclopramide, Antihistamines	Other drugs considered safe
Antihypertensives	Clonidine, Verapamil, Hydralazine	Other drugs considered safe

Table 1: Commonly used drugs in anaesthesia- drugs to avoid and drugs considered safe in DAO enzyme deficiency

CONCLUSION

To our knowledge, this is the first report of successful provision of epidural anaesthesia in a patient with all 3 syndromes. There is a delicate balance between the risk of cardiovascular instability with DAO deficiency and POTS, and the resistance to local anaesthetic drugs in hypermobility syndromes

REFERENCES

1. L. Maintz, N. Novak, Histamine and histamine intolerance, The American Journal of Clinical Nutrition, Volume 85, Issue 5, May 2007, Pages 1185–1196, https://doi.org/10.1093/ajcn/85.5.1185
2. W. L. Corbett, C. M. Reiter, J. R. Schultz, R. J. Kanter, A. S. Habib, Anaesthetic management of a parturient with the postural orthostatic tachycardia syndrome: a case report, BJA: British Journal of Anaesthesia, Volume 97, Issue 2, August 2006, Pages 196–199, https://doi.org/10.1093/bja/ael105