Methemoglobinemia and Anaesthesia – A Case Summary & Discussion
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ABSTRACT:
• Methemoglobinemia is a hemoglobin disorder which results due to oxidation of the ferrous iron to the ferric iron within the hemoglobin molecule.
• Methemoglobin is incapable of carrying O₂ to the tissues.
• The hallmark of this condition is unexplainable cyanosis and decrease in SpO₂ despite adequate ventilation and increase in FiO₂.
• We present the anaesthetic management of a patient with methemoglobinemia posted for cystoscopy and highlight the key features in management.

INVESTIGATIONS:
• 2D-ECHO, CT Chest, CT Pulmonary Angiography: Normal
• Hb Electrophoresis: Absence of abnormal form of hemoglobin
• Methemoglobin level: 5%
• G6PD level: Normal
• ABG on room air pH: 7.3, pCO₂:25, pO₂: 56, HCO₃⁻: 14, BE:8.3, SaO₂: 87.8%
• Dynamic Retrograde Urethrogram: Stricture at the junction of penile and bulbar urethra

METHEMOGLOBINEMIA:
Congenital
• Glucose-6-phosphate dehydrogenase or NADPH methemoglobin reductase deficiency
• Hemoglobin M hemoglobin variants

Acquired Methemoglobinemia – “Triggers”
Drugs commonly used in anesthetic practice:
• Local anesthetic agents (prilocaine, lidocaine, benzocaine) - The “Caines”
• Metoclopramide
• Nitric oxide
• Nitroglycerin
• Sodium nitroprusside

Treatment
• Identification and removal of the offending drug or toxin
• Oxygen; Control of airway
• Methylene blue: 1 to 2 ml/kg of a 1% solution IV, repeat after 30-60 minutes SOS
• Oral ascorbic acid (200-500 mg)
• N-acetylcysteine , Riboflavin, Vitamin E?
• Exchange transfusion
• Haemodialysis

CASE SUMMARY:
18 month old child, Weight: 8 kg, hailing from Raigad, Konkan District, Maharashtra

Chief Complaints
• Difficulty in micturition, dribbling of urine since 1 month
• Bluish discoloration of nails and lips
• No history suggestive of cardio - respiratory disease
• No similar history in the family or community

On Examination
• Irritable, pale
• Cyanosis

SALIENT FEATURES:
• Liquid paraffin for lubrication of LMA, Cystoscopes
• Avoidance of precipitating drugs
• Methylene blue standby
• Limitation of pulse oximetry as monitor

CONCLUSIONS:
• Knowledge of the condition
• Appropriate monitoring
• Avoidance of the precipitating factors
• Availability of antidote

REFERENCE: