Case Report

A Rare Case Report on Metoclopramide Induced Cardiac Effects in A Tertiary Care Hospital

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ABSTRACT

Metoclopramide, widely used for its anti-emetic properties antagonizes the action of the dopaminergic receptors, thereby preventing postoperative nausea and vomiting. The mechanism of action of the drug acts is multifactorial. We herein, present a case of an antenatal mother who developed cardiac effects after administration of injection metoclopramide intravenously pre-operatively for elective LSCS. Supportive care provided, and emergency LSCS they performed in view of maternal resuscitation. The procedure was uneventful, and the patient stabilized gradually. The ADR classified as life threatening, according to the WHO scale. The case is presented to shed light regarding the side effects of one of the most used drugs in clinical practice. In addition, limited literature sources compel the study on such ADR. Our case report aims to alert the physicians to remain diligent in reporting such reactions and to prevent further episodes of such reactions.

Keywords: Dopaminergic receptors, ADR, LSCS, WHO scale.

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INTRODUCTION

Metoclopramide, structurally (1, 4-amino-5-chloro-2methoxy-N-(2-diethyl-aminoethyl) Benz amide), is a potent dopaminergic D2 receptor antagonist effectively used as an anti-emetic and gastro prokinetic agent.[1] The drug has multi-site action. The prokinetic effect increases the lower esophageal sphincter muscle tone,[2] whereas the anti-dopaminergic effect triggers the Chemoreceptor Trigger Zone, thereby preventing post-operative nausea and vomiting,[3] which is one of the major complications of anesthesia. However, metoclopramide is effective only in parturient under spinal anesthesia. The effect in the non-obstetric population under general anesthesia is usually uncertain and requires higher doses.[2] customary use of the drug compels the study about the clinically relevant adverse effects to provide information for an evidence-based approach. We present a case of an antenatal mother who developed cardiovascular side effects post administration of metoclopramide intravenously.

Presentation of Case

A 34-year-old antenatal mother with singleton pregnancy at term (38+5 weeks) and breech presentation was administered with metoclopramide (Inj.Perinorm-10mg) intravenously preoperatively for elective LSCS. Post administration, the patient developed tachycardia and chest discomfort immediately, followed by bradycardia and unresponsiveness. Chest compressions done until a pulse was palpated, and the patient was given volume resuscitation 500ml and, adrenaline 1ml and hydrocortisone 100mg intravenously after that the patient responded to commands. The patient immediately shifted for emergency LSCS in view of maternal resuscitation. A 3.18kg weighted live female neonate was delivered with three loops of cord around the neck. The patient's vitals were stable throughout the procedure. Intra and post-

operative 2D Echo was done and noted an improvement in the ejection fraction to 50%. According to the WHO causality assessment scale, the adverse drug reaction was rated as life threatening.

The histories of the patient are as follows:

Obstetric History	G2P1L1 Present pregnancy: Spontaneous conception I Trimester: No history of UTI, Bleeding PV II Trimester: Inj.TT 2 doses taken III Trimester: GDM, Hypothyroidism
Menstrual History	Menarche at 14years, Irregular periods
Surgical History	LSCS
Medication History	Insulin Detemir (0-0-26U), Insulin Aspart (8U-0-6U), Tab. Levothyroxine 88mcg OD
No previous drug allergies or reported adverse drug reactions	

The patient stabilized and hence discharged with the following medications:

Tab. Cefuroxime Axetil 500mg BD	Tab. Pantoprazole 40mg BD
Tab. Digoxin 0.25mg OD	Tab. Paracetamol 650mg TDS
Tab. Trimetazidine Modified Release 35mg BD	Tab. Calcium +Cholecalciferol 500mg OD

DISCUSSION

The side effects of metoclopramide occur in about 10-20% of patients. Careful consideration of risks and benefits is necessary owing to its prophylactic use, especially in pregnant women as the risk is for both the mother and fetus. Shaklai reported the first adverse effect of cardiac arrhythmia associated with metoclopramide in 1974.[6] our case highlights the causation between metoclopramide and cardiac effects based on the following:

a) Immediate occurrence of the side effect

b) Number of previous reports and rechallenges

c) ADR confirmed by evidence (WHO scale)

While most literature report only bradycardia followed by cardiac arrest, our case developed both tachycardia and bradycardia, followed by unresponsiveness. The differential diagnosis was assessed to be anaphylaxis, but this was ruled out due to the absence of anaphylactic symptomatology. Drug-drug interactions were ruled out, as there were no medications administered concurrently.

The effect in our case is not dose related and not due to the pharmacokinetics of the drug as the effect occurred immediately after the administration of a single dose of the drug. The route of administration can be a causative factor as most of the reported cases involve the intravenous administration of the drug. A case series by Pegg SM showed an average fall in the systolic pressure of 22% and a diastolic pressure of 20%.[8]

The development of CV side effects in our case can be multifactorial. Pregnancy can be a contributing factor for the development of the symptoms as it can predispose the patient to the development of arrhythmia, mainly tachycardia, with or without structural abnormality. Since the patient denied any previous cardiac complications, the incidence of the effect is purely due to the underlying physiological

condition which acted as an add-on to the effects caused by metoclopramide. Prolactin secretion due to metoclopramide and peripartum is explanatory for the development of arrhythmia in our patient. The change of cholinergic tone caused by metoclopramide and pregnancy influences the heart by increasing the vagal stimulation. In addition, metoclopramide differs from procainamide, an anti-arrhythmic, by an aryl substitution, is known to prolong AV conduction, thereby causing arrhythmias. A review by Rumore MM supports the statement.[7] One or a combination of the above said mechanisms could have prompted the patient to the occurrence of symptoms. Rechallenge was not done in this case considering the risks and benefits. The patient was prescribed digoxin and trimetazidine on discharge.

CONCLUSION

In summary, our patient developed a CV side effect in response to the administration of metoclopramide, which the patient did not experience during her previous LSCS. Though metoclopramide is used to prevent PONV, it can occasionally cause CV side effects and hence it is necessary to carefully monitor the patients receiving the drugs, with or without structural abnormalities as it may have a life-threatening effect. Reporting of ADR plays a vital role to provide an alarm to the physicians thereby preventing further episodes of the ADR in any patient.

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