Academic Journal of
Pediatrics & Neonatology
ISSN: 2474-7521

Case Report
Volume 1 Issue 4 - August 2016
DOI: 10.19080/AJPN.2016.01.555568

Acad J Ped Neonatol

Extrapyramidal Side Effects of Metoclopramide in a Child-A Case Report

Miroslav Elek*,Pandurevic Bozalo Kosa, Ivanovic Tamara, Golijanin Natasa and Djurdjevic Dragan

Pediatric department, East Sarajevo Hospital, Bosnia and Herzegovina

Submission: June 06, 2016 ; **Published:** August 05, 2016

***Corresponding author:** Miroslav Elek, East Sarajevo University, Filipa Visnjica 1 East Sarajevo Bosnia and Herzegovina.

Abstract

Metoclopramide is antiemetic, antinauseant and gastric prokynetic. European medicines agency (EMA) in July 2013 has officially recommended a very restricted use of metoclopramide in children, because of serious and common neurological side effects. A 3 years old boy was admitted to our pediatric department due to altered consciousness, nausea, vomiting and dehydration. Day before he recived a one oral and one intravenous dose of Reglan (metoclopramide). Immidiately after admission he developed dramatic neurological symtoms with face and extremity muscles spasms, trismus, ophistotonus and extreme agitation. Neurological symptoms were present for about 3 hours, with periodically withdrawal and worsening. He received only symptomatic therapy and after 6 hours child was fully recovered and without complaints. Despite repeated warnings about the possible neurological side effects, metoclopramide continues to be used in children for the treatment of nausea and vomiting. If the physician is not familiar with these side effects of metoclopramide physician can easily incorrectly interpret these symptoms and diagnose it as tetany, convulsions, encephalitis, food poisoning, intoxication etc. Physicians need to follow the recommendations about indications, dosage, drug forms and way of administration of metoclopramide in children. Detailed previous medical history and drug use history is necessary for avoiding misdiagnosis, and for timely recognition and adequate treatment of metoclopramide side effects in children.

Keywords: Metoclopramide; Extrapyramidal; Side Effects; Children

Introduction

Metoclopramide(chemicalname: 4-amino-5-chloro-N-2-diethylaminoethyl-2-methoxybenzamide hydrochloride monohydrate) is antiemetic, antinauseant and gastric prokynetic. By blocking dopamine (D2) receptors, and affecting $5HT_3$ receptors as antagonist and $5HT_4$ receptors as agonist, metoclopramide inhibits brain vomiting center, accelerates gastric emptying and increases the resting tone of the lower esophageal sphincter. Metoclopramid administred intravenously expresses its effects after 1-3 minutes. The effect occurs 10-15 minutes after intramuscular administration, and 15-20 minutes after oral dose. Metabolism takes place in the liver, and about 80% of the drug is excreted in the urine in the first 24 hours after intake. Half-life vary from 2,5 to 6 hours. Dose of metoclopramide in children, if it must be given, should not exceede 0,10-1,15 mg/kg/8h, or 0,5mg/kg,/day.

European medicines agency (EMA) in july 2013 has officially recommended a changes to the use of metoclopramide in children. The use of metoclopramide in children now is very resticted because of serious and common neurological side effects, especially extrapyramidal disorders (acute dystonia, rigidity, hypokinesia/akinesia, dyskinesia, akathisia, tremor and paraesthesias, neurloleptic malignant syndrome). Acute dystonia is most frequent side effect in children. It includes tonic muscular contractions (face and extremity muscles), trismus, oculogyric crisis, torticollis, opisthotonus, pharyngeal muscle spasm or laryngospasm. Rigidity is increased muscle tone and steady resistance to pasive movements of the limbs. Tardive dyskinesia is characterized by involuntary choreiform movements of the tongue, face, mouth and extremities. It is side effect that appears more often in the elderly and can be permanent.

Akathisia is a subjective feeling of objective sign of muscle unrest, particulary in the lower extremities. Patient has difficulty to remaine lying and stay calm, and it can be misdiagnosed as psychiatric disorder or encephalitis. Neuroleptic malignant syndrome is rare but fatal complication. It is presented with hypertermia, skeletal muscles hypertonicity, mental changes and autonomic instability. The incidence of some of these side effects in children is 6 times higher than in adults, and it can be up to 25%. Extrapyramidal disorders can occur even at minimal dosage level, usually within 24-72 hours after taking this medicine. Typical medical history and clinical signs are sufficient for diagnosis. Other less frequent side affects of metoclopramide are elevated prolactine levels, transient hypertension, cardiac conduction disturbances, altered hepatic function test results, methaemoglobinaemia,

agranulocytosis etc. Dispite recomendations for restriction of use of metoclopramide in pediatric population, we often admitt child with the information about prescribed or applied metocopramide in emergency department. While pediatricians generally comply with these recommendations, very often metoclopramide is prescribed to the children by general practitioners and physicians in emergency services [1-5].

Official recomendations of European medicines agency about use of metoclopramide in children are:

Metoclopramide is officially contrainidcated in children under 1 year of age. In children and young over 1 year of age (and under 20 years) metoclopramide is restricted to following conditions and only as second line therapy:

a. Vomiting associated with radiation therapy, chemotherapy or postoperative nausea and vomiting

b. Assist in small bowel intubation.

Oral formulations of metoclopramide are associated with overdose, and they are not recommended in children and adolescents. If they are administred, patients should use appropriately designed graduated oral syringe to ensure accuracy.

Intravenous administration should be as slow bolus over at least 3 minutes. Metoclopramide should only be prescribed for short-term use (up to 5 days) and maximum dose in 24 hours is 0,5 mg per kg body weight. Metoclopramide should not be used in pregnancy if not clearly needed, and it is not recommended during the first three months of pregnancy unless there are compelling reasons to do so. Metoclopramide is excreted in human breast milk and its use is not recommended in nursing mothers unless the expected benefit outweighs the potential risk.

The use of metoclopramide is strictly contraindicated in patients in whom increased gastrointestinal motility might be dangerous, in patients with phaeochromocytoma, hypersensitivity to metoclopramide, procaine, procainamide, patients with porphyria or epilepsy.

Case Report

A 3 years old boy was admitted to our pediatric department due to altered consciousness, nausea, vomiting and dehydration. One day before admision started diarrhea and vomiting. A morning before he recived a single adequate therapeutic oral dose of Reglan (metoclopramide), and night before in the emergency service with intravenous crystalloids he recived one adequate therapeutic intravenous dose of Reglan. At the admission child was exhaused, somnolent, and had signs of mild to moderate dehydration. His vital signs were as following: arterial blood pressure 90/60 mmHg, pulse 100/min, respiratory rate 20/min, axillary temperature 37,5oC, capillary refilling 2-3 sec. Immidiately after admission he developed dramatic neurological symtoms with face and extremity muscles spasms, trismus, ophistotonus and extreme agitation. Child periodically complained of pain in the arms and stomach. Laboratory testing was done and intravenous rehydration with crystalloids was administred. In laboratory results we found mild metabolic acidosis and mild hypokalaemia which were not present in control laboratory testing after one hour of rehydration and potassium substitution. Stool testing has shown a positive result for Rota virus. Neurological symptoms were present for about 3 hours, with periodically withdrawal and worsening. Intravenous rehydration and electrolyte substitution were continued and after 6 hours child was fully recovered and without complaints. Control examination was performed after two days, and finding was completely normal.

Discussion

Despite repeated warnings about the possible neurological and other side effects, metoclopramide continues to be used in children for the treatment of nausea and vomiting. Metoclopramide is prescribed to the children most often by the general practitioners and doctors in the emergency services. It is the duty of pediatricians to inform these colleagues with whom they cooperate about possible side effects of metoclopramide in children. Neurological adverse effects of metoclopramide are idiosyncratic and do not depend on dosage. They can appear even at standard treatment dose, but they are more likely to appear in overdoses and have cumulative effect with repeated use. Possible explanation is that metoclopramide by blocking a specific postsynaptic dopamine receptors in basal ganglia can produce acute extrapyramidale reactions. Children, particulary females are more susceptible. Fortunately, acute reactions are usually self limited, respond well to the treatment and do not need any further evaluation and follow-up . In children most frequent neurological reactions are face and extremity muscle contractions, torticolis, opisthotonus, oculogyric crises.

Patient and parents experience these sudden and rapidly accelerated symptoms very dramaticly and should be, in case of prescribing metoclopramide, warned in advance about the possibility of developing these symptoms. If he is not familiar with these side effects of metoclopramide physician can easily incorrectly interpret these symptoms and diagnose it as tetany, convulsions, encephalitis, food poisoning, intoxication etc. Phyisicians in the first place need to take good previous medical history, and history about drug use, and than recognise these side effects and treat them properly. Recommended treatment in acute phase is to secure airway in case of upper airway obstruction because of pharyngeal muscle spasm or laryngospasm, then apply oral, intravenously or intramuscular: Diphenhydramine hydrochloride (1,25 mg/kg/dose, maximum 300 mg/day with 6 hour intervals), or benztropine mesylate (0,02-0,05 mg/kg/dose, maximum 2 mg/kg/day and once or twice per day), or biperiden lactate (0,04 mg/kg, maximum four doses with 30 minute intervals). Midazolam can be administred in patients with convulsions, in common anticonvulsive doses.

How to cite this article: Miroslav E,Pandurevic BK, Ivanovic T, Golijanin N, Extrapyramidal Side Effects of Metoclopramide in a Child-A Case Report. Acad J Ped Neonatol. 2016; 1(4): 555568. DOI: 10.19080/AJPN.2016.01.555568

Conclusion

Use of metoclopramide in the pediatric population should be restricted to some specific conditions such as small bowel intubation procedures, radiotherapy, chemotherapy and postoperative period associated nausea and vomiting, and only as a second line medication. Metoclopramide is contraindicated in children under one year of age. Physicians need to follow the recommendations about dosage, drug forms and way od administration of metoclopramide in children. Detail previous medical history and drug use history is necessary for avoiding misdiagnosis, and for timely recognition and adequate treatment of metoclopramide side effects in children.

References

1. European Medicines Agency recommends changes to the use of metoclopramide, 2013.
2. Sedat Işıkay, Kutluhan Yılmaz, Mehmet Almacıoğlu (2013) Evaluation of Patients with Metoclopramide-Induced Acute Dystonic Reaction. JAEM 12: 80-84.
3. Selda Hizel Bulbul,Emine Dibek Misirlioglu,Erennur Tufan,Olcay Evliyaoglu (2010) Side Effects of Metoclopramide: Does It Deserve to Prescribe For Nausea,Vomiting? The New Journal of Medicine 27: 84-86.
4. Mirena Valkova, Boyko Stamenov, Dora Peychinska, Ivanka Veleva, Pepa Dimitrova (2014) Metoclopramide-induced Extrapyramidal signs and symptoms-Brief review of literature and Case report, J of IMAB 20(6).
5. Sedat Işıkay, Mehmet Almacıoğlu, Kutluhan Yılmaz (2012) Metoclopramide Induced Acute Dystonic Reaction in a Child: A Case Report. JAEMCR 3(2): 59-61.

How to cite this article: Miroslav E,Pandurevic BK, Ivanovic T, Golijanin N, Extrapyramidal Side Effects of Metoclopramide in a Child-A Case Report. Acad J Ped Neonatol. 2016; 1(4): 555568. DOI: 10.19080/AJPN.2016.01.555568