

Midodrine in Pregnancy: A Case Report and Literature Review

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Introduction

Midodrine is a sympathomimetic agent with an alpha₁-receptor agonist effect. This agent increases arteriolar and venous tone resulting in a rise in systolic and diastolic blood pressure in standing, sitting, and supine positions. It is used in treating patients with orthostatic hypotension and hypotension resulting from various etiologies. Its use in pregnancy falls into category C. We are presenting a case of twin pregnancy with midodrine use throughout pregnancy and a good fetal outcome.

Case Report

This is the case of 37-year-old woman with adrenal insufficiency, and autonomic dysfunction who was maintained on oral hydrocortisone 15 mg in a.m. and 10 mg in p.m., fludrocortisone 0.1 mg once daily, and midodrine 10 mg three times daily. She had a history of documented hypotension with systolic blood pressure of 50 to 70 mm Hg and an episode of circulatory collapse when she was off medications because of nausea and vomiting. She required intubation, mechanical ventilation and IV inotropic support for few days. She had undergone dual chamber pacemaker implantation in the past because of syncope with documented sinus bradycardia and pauses. She has a history of symptomatic inappropriate sinus tachycardia, which was treated with sinus node modification ablation procedure because of failure of beta blockers, calcium channel blockers and ivabradine in controlling her palpitations. Her past medical history was also significant for bronchial asthma, obesity with obstructive sleep apnea, recurrent abortions and Deep vein thrombosis (DVT) with negative work up for Antiphospholipid syndrome (APS) and other hypercoagulable diseases. She underwent *in vitro* fertilization (IVF) and became pregnant with dichorionic/diamniotic (di/di) twins. She developed hyperemesis gravidarum in the 1st trimester with worsening in her dizziness that was treated with antiemetic medications. Midodrine 10 mg three times daily was continued throughout her pregnancy. She delivered with an elective cesarean section at 37 weeks of gestation based on her obstetrician's recommendation. The twins were a healthy baby boy weighing 2.4 Kg, and a healthy baby girl weighing 2.3 Kg. At six months follow-up, the patient felt better than during pregnancy.

She is breastfeeding her babies while on midodrine with no noticeable side effects on the infants so far. At 6 months follow up the 1st infant's weight, height, and head circumference were appropriate for age (50th, 75th, and 50th percentile respectively). The 2nd infant's weight, height, and head circumference were also appropriate for age (75th, 50th and 75th percentile respectively). They were feeding normally and did not have any significant health issues.

Discussion

Midodrine is a sympathomimetic agent with an alpha₁-receptor agonist effect. This agent increases arteriolar and venous tone resulting in a rise in standing, sitting, and supine systolic and diastolic blood pressure. The efficacy of this agent in orthostatic hypotension and recurrent neurocardiogenic syncope has been demonstrated in open-label and double-blind studies [1-3].

A recent systematic review and meta-analysis shows that there is insufficient and low-quality evidence to support the use of midodrine

for orthostatic hypotension [4]. However, another systematic review suggests that midodrine improves clinically important outcomes in patients with symptomatic orthostatic hypotension and recurrent reflex syncope with evidence warranting low/moderate confidence [5]. There are patients with a good clinical response to midodrine, and its discontinuation may have a deleterious effect on them. The patient mentioned above had a history of significant hypotension and one episode of circulatory collapse when she was unable to take her medications including midodrine, because of GI symptoms. She became pregnant with twins after IVF therapy and midodrine was maintained during pregnancy. She delivered two healthy babies at 37 weeks by elective cesarean section.

Midodrine use in pregnancy is considered US Food and Drug Administration (FDA) category C [6], which means that animal reproduction studies have shown an adverse effect on the fetus, and while there are no adequate and well-controlled studies in humans, potential benefits may warrant use of the drug in pregnant women despite potential risks. To our knowledge, there is only one case report of using midodrine during pregnancy [7] and this case would be the second and the first in twin pregnancy. This case report may help physicians looking after pregnant patients with symptomatic orthostatic hypotension or neurocardiogenic syncope and aid in making their decision to treat such patients with midodrine during pregnancy.

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