

REVIEW

Domperidone-Associated QT Interval Prolongation in Non-oncologic Pediatric Patients: A Review of the Literature

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ABSTRACT

Background: Domperidone is a prokinetic agent used to treat pediatric gastroesophageal reflux disease. Health Canada has issued warnings about an increased risk of domperidone-associated ventricular arrhythmias and sudden cardiac death. However, the supporting data referred only to adult patients; therefore, extrapolating the safety risks to pediatric patients is difficult.

Objective: To summarize and evaluate the evidence for domperidone-associated QT interval prolongation, ventricular arrhythmias, and sudden cardiac death to determine the safety of this drug for pediatric patients.

Data Sources: Two databases (MEDLINE [1946 to August 2015] and Embase [1980 to August 2015]) were searched with the following Medical Subject Headings and keywords: “domperidone”, “arrhythmias, cardiac”, “death, sudden, cardiac”, “electrocardiography”, “heart diseases”, “long QT syndrome”, “tachycardia, ventricular”, “torsades de pointes”, and “ventricular fibrillation”. The search was limited to studies conducted in humans under 18 years of age and published in English.

Study Selection and Data Extraction: Original research included in this review reported on the cardiac-related safety of domperidone in non-oncologic patients under 18 years of age.

Data Synthesis: Of the 5 studies meeting the inclusion criteria ($n = 137$ patients), one reported a statistically significant change in the corrected QT (QTc) interval, but the clinical significance was unclear. Most of the studies reported rare occurrences of pathological QTc intervals in a limited number of patients. However, confounding factors (e.g., abnormal electrolyte level or concurrent medications) were not consistently considered. Potential bias might have been alleviated by blinding of electrocardiogram (ECG) assessors; however, this was not consistently implemented. The designs of the included studies did not allow assessment of causality. The results should be interpreted with caution.

Conclusions: Although the available evidence is limited, pathological QTc intervals were noted among a small number of infants, which supports the possibility of domperidone-associated risk of prolonged QTc interval. Because of the potential severity of QT interval prolongation, individual assessment and routine ECG monitoring should be implemented for patients receiving domperidone.

Keywords: domperidone, QT interval prolongation, arrhythmia, pediatrics

RÉSUMÉ

Contexte : La dompéridone est un agent gastroprokinétique utilisé pour traiter le reflux gastro-œsophagien chez l'enfant. Santé Canada a publié des mises en garde à propos d'un risque accru d'arythmies ventriculaires et de mort subite cardiaque associées à la dompéridone. Or, comme les données probantes ne concernent que l'adulte, il est difficile de généraliser les risques pour la santé à l'enfant.

Objectif : Résumer et analyser les données probantes portant sur l'allongement de l'intervalle QT, les arythmies ventriculaires et la mort subite cardiaque associées à la dompéridone afin de déterminer le degré d'innocuité du médicament chez l'enfant.

Sources des données : Deux bases de données (MEDLINE [1946 à août 2015] et EMBASE [1980 à août 2015]) ont été interrogées en utilisant les mots clés et les Medical Subject Headings (MeSH) suivants : « domperidone » (dompéridone), « arrhythmias, cardiac » (arythmies cardiaques), « death, sudden, cardiac » (mort, subite, cardiaque), « electrocardiography » (électrocardiographie), « heart diseases » (cardiopathies), « long QT syndrome » (syndrome du QT long), « tachycardia, ventricular » (tachycardie, ventriculaire), « torsades de pointes » (torsades de pointes) et « ventricular fibrillation » (fibrillation ventriculaire). La recherche se limitait aux études publiées en anglais et effectuées chez l'humain de moins de 18 ans.

Sélection des études et extraction des données : Les études retenues dans la présente revue abordaient l'innocuité cardiaque de la dompéridone chez les patients de moins de 18 ans qui ne sont pas atteints d'un cancer.

Synthèse des données : Parmi les cinq études qui répondaient aux critères d'inclusion ($n = 137$ patients), une indiquait un changement statistiquement significatif dans l'intervalle QT corrigé (QTc), mais la signification clinique demeurait floue. La plupart des études signalaient de rares cas d'intervalles QTc pathologiques chez un nombre limité de patients. Cependant, des facteurs de confusion (déséquilibre électrolytique ou emploi concomitant de médicaments, par exemple) n'étaient pas systématiquement pris en compte. Il aurait été possible d'éviter de potentiels biais en tenant les lecteurs d'électrocardiogramme (ECG) dans l'ignorance du traitement, mais cette mesure n'était pas toujours mise en œuvre. Les plans des études retenues ne permettaient pas d'évaluer la causalité. Il faut donc interpréter les résultats avec prudence.

Conclusions : Bien qu'il n'y ait que peu de données probantes, des cas d'intervalles QTc pathologiques ont été relevés chez un petit nombre de

nourrissons, ce qui vient appuyer le risque possible d'allongement de l'intervalle QTc associé à la dompéridone. À cause de la potentielle gravité de l'allongement de l'intervalle QT, une évaluation individuelle et une surveillance ECG systématique doit être mise en place pour les patients qui reçoivent de la dompéridone.

Mots clés : dompéridone, allongement de l'intervalle QT, arythmie, pédiatrie

INTRODUCTION

Domperidone, a peripheral dopamine antagonist, has been widely used since it was released on the Canadian market in 1985.¹ In 2013, there were an estimated 2 million prescriptions for this drug in Canada for various indications, including chemotherapy-induced nausea and vomiting and gastrointestinal disorders such as gastritis, gastroparesis, or gastroesophageal reflux (GER).^{2,3} Pediatric GER is a common childhood condition, affecting about 23% of infants, with peak incidence at 5 months of age.⁴ It is characterized by regurgitation of gastric contents into the esophagus, retching, vomiting, or spitting during the postprandial period.^{3,5} The condition is typically benign, and most children outgrow it without complications by 18 months of age.³ However, in a small subset of children, the symptoms of GER can progress to gastroesophageal reflux disease (GERD), which is characterized by more serious conditions such as esophagitis, malnutrition, poor weight gain, or feeding refusal.^{3,5} Because GERD can negatively affect the quality of life of the child and the family, pharmacotherapy is considered if nonpharmacological measures fail.³ Histamine-2 receptor antagonists may be trialled in infants, but their use is limited because of a propensity toward tachyphylaxis, and there is a lack of evidence supporting the use of proton pump inhibitors in children under 1 year of age.³ Therefore, many clinicians consider administering a prokinetic agent (e.g., domperidone, metoclopramide, cisapride).⁴ The use of metoclopramide is limited because of the risk of extrapyramidal movement disorder, and cisapride is rarely used because of an associated risk of increase in the corrected QT (QTc) interval.⁵ Therefore, domperidone is currently the prokinetic agent of choice.⁵

Domperidone promotes relaxation of the gastric tract and esophageal sphincter, facilitates gastric emptying, and decreases small-bowel transit time.⁶ In pediatric GERD, domperidone is given orally at 1.2–2.4 mg/kg per day (to a maximum of 80 mg/day), divided into 3 or 4 doses given 30 min before meals and at bedtime.⁷ With oral administration, the elimination half-life ranges from 12.6 to 16 h.⁶ In recent years, concerns about domperidone-associated cardiac adverse effects have surfaced.³ In 2012, Health Canada issued an advisory informing

patients and health care professionals of the potential risk of ventricular arrhythmias and sudden cardiac death associated with domperidone doses greater than 30 mg/day.⁸ This warning was reissued in 2015, with domperidone contraindicated for patients with a prolonged cardiac conduction interval (particularly the QT interval), cardiac disease, moderate to severe hepatic impairment, significant electrolyte abnormalities, concomitant use of QT interval-prolonging drugs and/or potent cytochrome P450 (CYP) 3A4 inhibitors, and also contraindicated at doses above 30 mg/day, because of risks of ventricular arrhythmias and sudden cardiac death.⁹ This advisory was based on accumulated patient safety data from 2 large population databases and domestic and international postmarketing surveillance reports.^{10–12} In particular, 2 case-control studies of adult patients identified an association between domperidone and ventricular arrhythmias and sudden cardiac death.^{10,11} When stratified by age, this risk was specifically observed in patients older than 60 years.¹⁰ Unfortunately, both studies included only adult patients; therefore, it is difficult to extrapolate the safety risks to the pediatric population.

Domperidone continues to be used for pediatric GERD, despite growing safety concerns. Given the potential serious outcomes of a prolonged QTc interval, such as torsades de pointes or sudden cardiac death, it is important to identify and quantify a patient's risk.^{11,13} The QTc interval, most commonly calculated using the Bazett formula ($QTc = \text{actual QT} / \sqrt{R-R}$ interval) remains an accessible and accurate parameter to assess ventricular repolarization.^{14,15} A QTc interval longer than 450 ms is considered pathological in pediatric patients.^{14,15} It is difficult to assess the associated risk of domperidone in pediatric patients without a clear understanding of the available literature. The objective of this narrative review was to summarize and evaluate the available evidence for domperidone-associated QTc interval prolongation and the risk of ventricular arrhythmia and sudden cardiac death in pediatric patients.

METHODS

A literature search was performed to identify pertinent published literature for this narrative review. Two databases were searched: MEDLINE (Ovid), from 1946 to August week 3,

2015, and EMBASE, from 1980 to August week 3, 2015. The following Medical Subject Heading (MeSH) terms were used to identify the relevant literature: “domperidone” and “arrhythmias, cardiac” or “death, sudden, cardiac” or “electrocardiography” or “heart diseases” or “long QT syndrome” or “tachycardia, ventricular” or “torsades de pointes” or “ventricular fibrillation”. The MeSH terms were exploded to include all subject headings, and each term was also searched as a keyword. The search was limited to studies available in English and conducted in humans under 18 years of age. Titles and abstracts were reviewed against the inclusion criteria by 2 independent reviewers (including A.D.M.). If eligibility for inclusion could not be determined from the title and abstract or if a study abstract was not available, the article was reviewed in full. The reference lists of identified studies were searched manually for additional relevant studies.

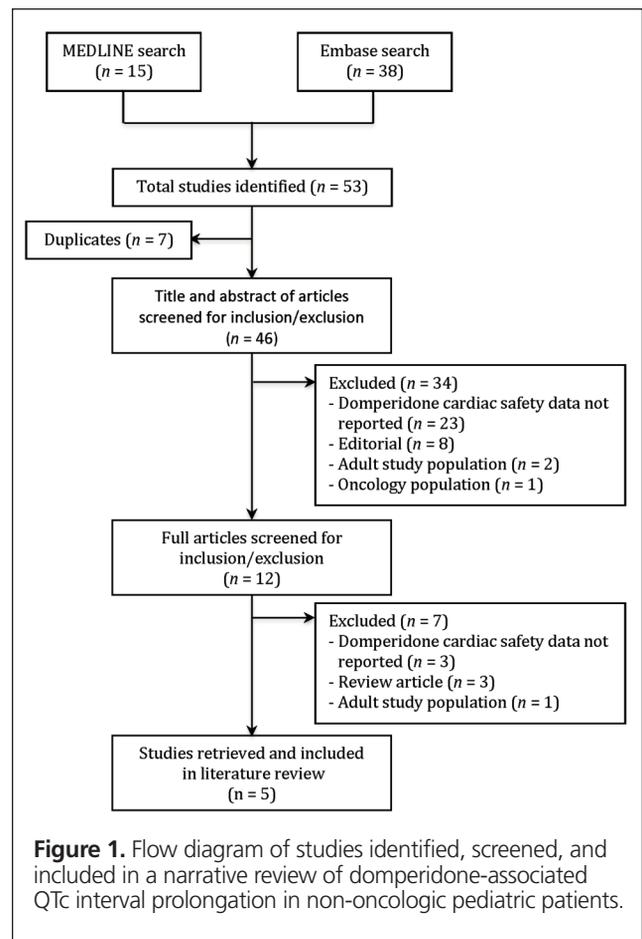
Original research (observational or randomized) reporting on the safety of oral domperidone was considered for inclusion in this narrative review. Studies were included if they reported cardiac-related safety data (e.g., change in QTc interval, sudden cardiac death). Studies were excluded if they were manually identified as editorials containing no original research. Studies reporting research conducted in pediatric oncology patients were excluded because of potential confounding risk factors for QTc interval prolongation (e.g., concurrent chemotherapy and supportive therapy; previous chemotherapy-induced cardiotoxicity).

RESULTS

The database searches resulted in a total of 53 citations. Of these citations screened for inclusion, 7 duplicates were excluded, along with 41 studies that did not meet the inclusion criteria (Figure 1). The following 5 studies, with a total of 137 patients, were eligible for further review: 1 randomized controlled trial (RCT),¹⁶ 3 prospective case series,¹⁷⁻¹⁹ and 1 case report.²⁰ The studies, published between 2005 and 2012, were conducted in Belgium, Brazil, France, Indonesia, and Turkey; no studies from North America were identified.

Study participants consisted of term and preterm infants born as young as 24 weeks gestational age and enrolled at between 2 days and 9 months of life. None of the included studies had patients between the ages of 1 and 18 years. The most common indication for domperidone was GER, but one study included infants treated with domperidone for any indication (e.g., intestinal motility disorders).¹⁸ Although QTc interval prolongation was reported, none of the included studies reported infants with arrhythmias or sudden cardiac death. Characteristics of the studies are summarized in Table 1.

The 2009 open-label RCT by Hegar and others¹⁶ involved 20 term infants with a presumed diagnosis of GER. Infants were screened for enrolment after failure to respond to optimized feedings (e.g., positioning and use of thickened formula) and parental reassurance. Exclusion criteria included baseline QTc



interval longer than 450 ms and abnormal baseline serum levels of calcium or magnesium. Baseline medications and comorbidities were not reported. The primary outcome of the study was a change in frequency of regurgitation, and the secondary end points were changes in pH of gastric aspirates and changes in the QTc interval between baseline and 3 to 5 days of therapy. The 20 infants underwent randomization with allocation concealment to domperidone or cisapride, both dosed at 0.8 mg/kg per day divided 3 times a day and administered 15 min before feeding. Upon initiation of therapy, the average postnatal age \pm standard deviation among patients receiving domperidone was 5.6 ± 2.8 months. For each electrocardiogram (ECG), 3 QTc intervals were calculated (using the Bazett formula) and the results averaged to provide a final QTc interval reading. There was no difference in QTc intervals between infants receiving domperidone and those receiving cisapride (402 ± 20 ms versus 404 ± 26 ms; $p = 0.758$). For the domperidone group, there was no statistically significant difference in mean QTc interval between baseline and day 3 to 5 of therapy (404 ± 18 ms versus 402 ± 20 ms; $p = 0.758$).

More recently, in 2012, Vieira and others¹⁷ reported on a prospective cohort of 45 preterm and term infants. Pediatricians recruited infants within the first year of life upon prescribing

Table 1. Characteristics of Studies Included in a Literature Review of Domperidone-Associated QT Interval Prolongation in Non-oncologic Pediatric Patients

Study	Study Population	Indication for Domperidone	Oral Domperidone Dose	ECG Findings
Randomized controlled trial				
Hegar et al. (2009) ¹⁶	Term infants (<i>n</i> = 20) Postnatal age (mean ± SD) 168 ± 84 days* Mean gestational age not provided	GERD	0.8 mg/kg per day,† divided tid	No significant change in QTc interval in either group No infants receiving domperidone had QTc interval > 450 ms
Prospective cohort study				
Vieira et al. (2012) ¹⁷	Preterm and term infants (<i>n</i> = 45) Mean postnatal age 75.3 days (range 19–218 days) Mean gestational age 38.6 weeks (range 35.5–42 weeks)	GERD	1.5–4 mg/kg per day, divided tid or qid	No significant change in QTc interval (from baseline to 7–14 days after domperidone initiation) 2 term infants had QTc interval > 460 ms
Günlemez et al. (2010) ¹⁸	Preterm infants (<i>n</i> = 40) Postnatal age (mean ± SD) 32.8 ± 2 days Gestational age (mean ± SD) 28.8 ± 2.4 weeks	Any indication	1 mg/kg per day, divided qid	No significant change in QTc interval 2 infants had asymptomatic QTc interval > 450 ms
Djeddi et al. (2008) ¹⁹	Preterm and term infants (<i>n</i> = 31) Postnatal age (mean ± SD) 17.6 ± 12.4 days Gestational age (mean ± SD) 34.2 ± 5.5 weeks	Any indication‡	1.3 ± 0.7 mg/kg per day, divided tid or qid	Significant change in QTc interval from baseline (mean ± SD 373.2 ± 4.8 ms versus 387.2 ± 5.1 ms; <i>p</i> < 0.01) 1 infant had asymptomatic QTc interval > 450 ms
Case report				
Rocha and Barbosa (2005) ²⁰	Term infant (<i>n</i> = 1) Postnatal age 90 days Gestational age not provided	GERD	1.8 mg/kg per day, divided tid	Symptomatic QTc interval > 450 ms

ECG = electrocardiography, GERD = gastroesophageal reflux disease, QTc = corrected QT, SD = standard deviation.

*Postnatal age was reported in months, but the unit of measure has been standardized to days, for comparison with other studies included in this review.

†The comparator in this study was cisapride, administered at the same dosage.

‡In this study, domperidone was allowed for any indication, but all included patients received the drug for an indication of GERD.

of domperidone for GER. Infants were excluded if they had a history of apnea; a history of cardiac, renal, hepatic, or gastrointestinal disease; a family history of cardiac dysrhythmia; or were receiving treatment with a macrolide antibiotic or an azole antifungal. Screening at baseline for electrolyte abnormalities was not performed. The primary end point was a change in the QTc interval from baseline. Infants received domperidone doses of 1.5 to 4 mg/kg per day divided 3 or 4 times a day before feeding. The mean gestational age of the infants was 38.6 weeks (range 35.5–42 weeks), with mean postnatal age at enrolment of 75.3 days (range 19–218 days). A comparison of the QTc interval, calculated using the Bazett formula, was performed between baseline and 7 to 14 days after initiation of domperidone. For each ECG, 3 QT intervals were measured to obtain a final averaged reading. No statistically significant change in mean QTc interval was observed (389 ± 20 ms and 397 ± 31 ms; *p* = 0.13). However, 2 male infants displayed asymptomatic pathological QTc interval, defined as QTc interval greater than 460 ms, which resulted in discontinuation of therapy. In both infants, the QTc interval returned to baseline upon therapy discontinuation.

From 2006 to 2008, Günlemez and others¹⁸ conducted a prospective cohort study among 40 preterm infants receiving

domperidone for any indication. All infants admitted to a neonatal unit with gestational age less than or equal to 34 weeks but not yet 37 weeks postnatal age were eligible for enrolment. Infants were excluded if they had baseline QTc interval above 450 ms, a family history of long QTc syndrome or sudden death, or a condition or medication that could prolong the QTc interval (e.g., electrolyte abnormalities, hypothyroidism, renal or hepatic abnormalities, intracranial disorders, or administration of a macrolide antibiotic or azole antifungal). The primary objective was to evaluate the effect of domperidone on the QTc interval. Infants received domperidone 1 mg/kg per day divided 4 times a day before feeding. The mean gestational age of enrolled infants was 28.8 ± 2.4 weeks, with mean postnatal age at initiation of therapy of 32.8 ± 2 days. Baseline ECG was compared with follow-up measurements at 3, 7, and 14 days of therapy. The QTc interval was calculated from the Bazett formula using the average of 5 nonconsecutive QT intervals. There was no statistically significant change in the mean QTc interval from baseline (370 ± 30 ms) to day 3 (380 ± 30 ms; *p* = 0.469), day 7 (370 ± 40 ms; *p* = 0.940), or day 14 (370 ± 30 ms; *p* = 0.951) after the start of domperidone therapy. Notably, on day 7 of therapy, 2 infants presented with asymptomatic pathological

QTc interval above 450 ms; the QTc interval returned to baseline upon discontinuation of domperidone.

In 2008, Djeddi and others¹⁹ published a prospective observational cohort involving 31 preterm and term infants who were receiving domperidone for GER. Infants were excluded if they had congenital long QTc interval, arrhythmias, or conduction disorders; if they were receiving treatments known to prolong the QTc interval or to inhibit CYP3A4; or had pre-existing metabolic disorders that could prolong the QTc interval (e.g., hypokalemia, hypocalcemia, elevated serum creatinine). The primary outcome was a change in QTc interval with domperidone use. An average domperidone dose of 1.3 ± 0.7 mg/kg per day was administered in 3 or 4 divided doses, and all infants received feeds adjusted for age. The overall mean gestational age was 34.2 ± 5.5 weeks, and the postnatal age at enrolment was 17.6 ± 12.4 days. A predefined subgroup analysis was performed, based on gestational age (group A, ≥ 37 weeks; group B, ≥ 32 weeks but < 37 weeks; and group C, < 32 weeks). The QTc intervals were assessed at baseline, and a second ECG was performed on average 2.5 ± 1.5 days after initiation of therapy. For each measurement, 3 QTc intervals were calculated using the Bazett formula and averaged. When analyzing the entire study population, statistically significant changes in the mean QTc interval were identified (373.2 ± 4.8 ms versus 387.2 ± 5.1 ms; $p < 0.01$); however, no clinical symptoms or ventricular arrhythmias were observed. One infant presented with a pathological, but asymptomatic, QTc interval of 450 ms at 48 h after the first dose of domperidone, which normalized upon discontinuation. Electrolyte abnormalities were not identified in this infant. In the subgroup analysis by gestational age, statistically significant changes were observed in all groups except infants less than 32 weeks of age (group C). Domperidone-associated QTc interval prolongation was correlated with hyperkalemia and serum potassium at the upper limit of normal, as well as advanced gestational age.

In 2005, Rocha and Barbosa²⁰ described a 3-month-old term boy with QTc interval prolongation associated with domperidone therapy. The infant had suffered chronic vomiting since the first month of life. A contrast-enhanced chest radiograph confirmed significant GERD. Aside from a history of frequent pulmonary infections and GER, the infant was healthy, and there was no family history of sudden cardiac death or prolonged QTc interval. Electrolyte values and concurrent medication information were not provided. After failure of nonpharmacological strategies (e.g., decreased volume of feeds, thickening of the formula), domperidone was initiated at 1.8 mg/kg per day divided 3 times a day, with associated symptom improvement and subsequent weight gain after 4 weeks. However, the parents reported that the infant experienced occasional cyanotic episodes, and an ECG revealed prolonged QTc interval (463 ms). Details of how the QTc interval was measured and calculated were not provided.

Domperidone was discontinued, and 1 month later, repeat ECG showed a normalized QTc interval of 400 ms.

DISCUSSION

The evidence describing domperidone-associated cardiac toxicity in non-oncologic pediatric patients is currently limited to 137 preterm and term infants described in 1 RCT,¹⁶ 3 prospective cohort studies,¹⁷⁻¹⁹ and 1 case report.²⁰ Most of these studies reported pathological QTc intervals in one or more infants receiving domperidone.¹⁷⁻²⁰ None of the studies reported ventricular arrhythmias or sudden cardiac death, and none of the studies included patients between the ages of 1 and 18 years.

Djeddi and others¹⁹ described a statistically significant change in the QTc interval (increase of 14 ms from baseline) with domperidone use. However, this change lacked clinical significance, as a greater change (e.g., 60-ms change from baseline) is considered to represent a risk of torsades de pointes or sudden cardiac death.^{15,19} Focusing solely on the QTc interval, without considering factors such as electrolyte abnormalities, comorbidities, sex, or genetic predisposition, is unlikely to reflect a patient's risk of adverse cardiac outcomes.^{15,21,22}

The evidence presented in this narrative review had several limitations. First, heightened safety concerns related to oral domperidone have sensitized researchers to its possible adverse cardiac effects, which may have contributed to reporting or observational bias. Observational bias may be controlled with blinding techniques; however, the ECG assessors in 2 of the studies were aware of domperidone administration and may have been more likely to report prolongation of the QTc interval.^{19,20} The case report of a 3-month-old infant with a prolonged QTc interval²⁰ reported assessing for several possible causes (e.g., family history, underlying cardiac abnormalities), but other known risk factors (e.g., abnormal electrolytes, concurrent CYP3A4 inhibitors) were overlooked.^{15,23} According to the Naranjo scale,²⁴ it is "possible" that the cyanotic event in this case was caused by domperidone; however, other factors may have contributed to the adverse reaction.

A second limitation was the considerable heterogeneity among study participants in terms of domperidone pharmacokinetics and the natural course of GER. For example, comparing term and preterm infants is challenging, as drug disposition evolves with physiological maturation.^{13,23} Although Djeddi and others¹⁹ accounted for variability in gestational age by means of a subgroup analysis, other studies analyzed both term and preterm infants as one population.

Finally, the design of the included studies limits the ability to assess domperidone's effects on QT interval prolongation. The relatively small sample sizes of the included studies do not allow for capture of rare events or assessment of causality.

In response to available studies and the Health Canada advisories,^{2,8-12} the Hospital for Sick Children (SickKids; Toronto, Ontario) has implemented its own guidelines for domperidone

use.⁷ These guidelines offer pediatric-specific strategies to reduce the risk of domperidone-associated cardiotoxicity. According to the SickKids guidelines, domperidone is contraindicated for patients with a prolonged baseline QTc interval; however, contrary to the Health Canada advisories,^{2,8,9} other risk factors (e.g., electrolyte abnormalities, concurrent CYP3A4 inhibitors) are considered to be relative contraindications and should be reviewed for each patient before domperidone is initiated. In addition, the Health Canada advisories indicate that domperidone doses above 30 mg/day are contraindicated; however, the lack of evidence in pediatric patients does not allow for similar conclusions to be drawn for this age group. In light of these considerations, the SickKids guidelines advise cautious use of domperidone at doses above 30 mg/day. The SickKids guidelines also recommend close clinical observation and ECG monitoring at baseline and 48 h after initiation of therapy for patients with multiple risk factors for torsades de pointes (e.g., hypokalemia, disorders of heart rate or rhythm, structural heart abnormalities, therapy with CYP3A4 inhibitor or potassium-depleting diuretics, or domperidone dose greater than 30 mg/day).⁷

This narrative review had noteworthy strengths and limitations. The review gathered sparse literature to assist in directing clinicians in pediatric domperidone use. Unfortunately, available resources limited the search to studies published in English. Domperidone is not available in the United States, which limits many English-speaking researchers from contributing to the included studies. In addition, literature involving pediatric oncology patients was excluded; as a result, potentially insightful and applicable research may have been missed. Although we speculated that bias was present and questioned the quality of the included literature, no formal assessment or quality tool was used to collect information about bias or to comment on areas of the study designs that could be improved.

CONCLUSION

Limited evidence is available regarding domperidone-associated QTc interval prolongation in pediatric patients, and no studies are available involving patients between 1 and 18 years of age. One of the studies included in this narrative review displayed a statistically significant change in the QTc interval, and a pathological QTc interval was consistently reported in 1 or 2 infants in most of the included studies. Although the incidence of the problem was low, there is a suggestion of an association between domperidone and QTc interval prolongation. A large observational cohort, with long-term follow-up, is required to provide further insight. Given the seriousness of QTc interval prolongation (and until further information is available), the Hospital for Sick Children recommends ECG monitoring at baseline and after 3 to 7 days of therapy in pediatric patients with multiple risk factors for torsades de pointes (e.g., hypokalemia, disorders of heart rate or rhythm, structural heart abnormalities,

receipt of CYP3A4 inhibitors or potassium-depleting diuretics, or domperidone therapy at a dose exceeding 30 mg/day).

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