

Is it Glycopyrrolate? A Case report

M Hameed, K Shah

Citation

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Abstract

We present a case of severe vomiting in a two year old girl complicated by respiratory aspiration and death following the first dose of liquid glycopyrrolate via her gastrostomy. She had history of vomiting after treatment with hyoscine patches. Our objective is to evaluate if Glycopyrrolate can cause severe vomiting with serious consequences, and to establish the risk in clinical practice.

INTRODUCTION

Glycopyrrolate is a muscarinic anticholinergic drug, a synthetic quaternary amine. It has been used medically in the USA for over twenty years for various indications such as preoperative medication to reduce pharyngeal and tracheobronchial secretions, as well as to decrease gastric secretions. It is also used in hyperhidrosis and some skin diseases topically, such as psoriasis and neurodermatitis.

The most common use is for hypersalivation (drooling) in children with neurodisabilities.

Glycopyrrolate does not cross appreciably into the CNS. Its side effects include difficult urination, blurred vision, and severe diarrhoea, classified as major, and headache, confusion, drowsiness, tachycardia, rash, dry mouth, constipation and vomiting, classified as minor.

CASE PRESENTATION

A two year-old girl was born with severe multiple neurodisabilities including microcephaly, generalized hypotonia and global development delay. She also suffered from severe feeding difficulties with gastroesophageal reflux requiring gastrostomy. An MRI scan confirmed brain structural abnormalities.

She had a history of five episodes of respiratory tract infections requiring hospitalisation, two of which were life-threatening episodes.

Hypersalivation and excessive secretions were initially treated with hyoscine patches, however due to the side effect of vomiting, it was replaced with Glycopyrrolate at a dose of 0.050 mg/kg. Following the first dose given via gastrostomy, the patient vomited violently then she was put to sleep and

was found unconscious soon after. Resuscitation failed, and post mortem examination revealed features consistent with acute aspiration.

METHODS

SEARCH

We carried out an article search and review for Glycopyrrolate from 1996 – to date from med line, however we selected five studies that included the side effects of Glycopyrrolate in their research and data analysis.

RESULTS OF THE LITERATURE SEARCH

Use of Glycopyrrolate and other Anticholinergic Medications for Sialorrhea in children with cerebral palsy

Glycopyrrolate was used by 37 patients with significant improvement in drooling in the vast majority (95%). Side effects included a dry mouth, thick secretions, urinary retention and flushing in 44% of cases.

Conclusion: a trial of Glycopyrrolate should be considered in children with cerebral palsy, where drooling is a significant problem.¹

Preliminary study of Glycopyrrolate in the management of drooling

Glycopyrrolate has a potent antisialogogue effect with a selective and prolonged effect on salivary and sweat gland secretions. Side effects include thirst, dilated pupils, facial flushing, constipation, bad breath and dry lips.

Conclusion: Glycopyrrolate was found to be 5-6 times more potent than atropine in its antisialogogue effect. It has minimal cardiovascular, ocular, CNS and dry mouth effects.

It has a lower incidence of side effects compared to other anticholinergic agents used so far.²

MANAGEMENT OF DROOLING:10 YEARS AFTER THE CONSORTIUM ON DROOLING,1990

Drooling is one of the more common associated dysfunctions in children with cerebral palsy. Glycopyrrolate remains theoretically the drug of first choice in treatment of drooling. Side effects include excessive dry mouth, constipation, urinary retention, decreased sweating, skin flushing and irritability or other behavioral changes.³

GLYCOPYRROLATE TREATMENT OF CHRONIC DROOLING

Glycopyrrolate therapy safely and effectively decreased drooling in patients with cerebral palsy and related neurodevelopmental disabilities. The most common side effects were behavioral changes such as irritability, skin flushing, epistaxis, headaches, urinary retention, constipation and allergic reaction.⁴

TREATMENT OF SIALORRHEA WITH GLYCOPYRROLATE

In a placebo-controlled, double-blind, crossover dose-ranging study in developmentally disabled children especially with cerebral palsy, Glycopyrrolate was shown to be effective. However 20% of the children exhibited adverse effects such as behavioral changes, constipation, diarrhea, oral dryness, urinary retention, headaches, drowsiness, dilated pupils, facial flushing, nasal congestion, vomiting, dizziness, dehydration, thickened secretions, fever and rash.⁵

This study also reported vomiting as an adverse effect, however this was not severe enough to warrant discontinuation of Glycopyrrolate. The following

contraindications to Glycopyrrolate were also mentioned: glaucoma, obstructive uropathy, gastro intestinal obstruction, severe ulcerative colitis and myasthenia gravis.

REDBRIDGE GLYCOPYRROLATE STUDY (NOT YET PUBLISHED)

A cohort of 10 patients with severe and complex neurodisabilities including cerebral palsy, severe gastroesophageal reflux, severe feeding difficulties (five of them fed via gastrostomy), global developmental and learning difficulties, have been treated with Glycopyrrolate. There has been maximum reduction of hypersalivation and minimum side effects, with no cases of vomiting yet reported. This project is in progress.

CONCLUSION

Our observational data is so far very much consistent with the first four studies from the search above. However we are aiming to collate more data and also to seek further opinion and advice from other researchers on Glycopyrrolate in order to find similar experiences to our index case and decipher whether Glycopyrrolate did in fact cause the severe vomiting that lead to acute aspiration and death.

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Author Information

Makki Hameed, MRCPI, FRCPCH UK. DCH

Consultant Paediatrician, The Child Development Centre and King George Hospital

Kiran Shah, MSc.M.R.PharmS.

Chief Pharmacist, The Child Development Centre and King George Hospital