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Pharmacological Properties of Simeticone Used in Gastroenterology

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ANNOTATION

According to the authors of the "Evelina" Medical Center, Almaty, Republic of Kazakhstan, the review describes data on the pharmacological efficacy of simetikon from the standpoint of evidence-based medicine for functional disorders of the gastrointestinal tract. And also, the advantages of using simeticone in the form of drops (the drug Bobotic) for these disorders are shown.

Introduction. According to the author F.M. Kipshakbayev, functional disorders of the gastrointestinal tract occupy one of the leading places in the structure of the pathology of the digestive organs in children of different age groups. Thus, according to the literature [3, 4, 5-7], abdominal pains are functional in 90-95% of children and only 5-10% are associated with an organic cause [1, 13-15].

The results of the study. Basically, the first days and the first year of life in children, functional disorders of the gastrointestinal tract are called intestinal colic. Functional intestinal colic in the first three months of life is observed in more than 70% of children. This is facilitated by anatomical and physiological features of the gastrointestinal tract in young children: morphofunctional immaturity of peripheral intestinal innervation, dysfunction of central regulation, late start of enzymatic systems of the gastrointestinal tract, increased gas formation, disorders of the formation of intestinal microbiocenosis [1,6, 16-19]. Among the reasons for the frequent development of intestinal colic in infants, allergic and pseudoallergic reactions, the transition from natural to artificial feeding, the inclusion of dietary supplements in the diet, the nature of the mother's diet can also be noted. The occurrence of pain syndrome is mainly associated with impaired intestinal motor function and increased gas formation [1, 20-23]. To diagnose intestinal colic in infants, the so-called "rule of three" is used: crying for three or more hours a day, at least three days a week, for three weeks in a row. The attack, as a rule, begins unexpectedly, against the background of complete well-being, more often on time or shortly after feeding, accompanied by prolonged crying. The child screams loudly, twitches his legs. The abdomen is swollen and tense, regurgitation is possible. As a rule, noticeable relief occurs immediately after defecation or gas discharge. There are no complaints outside of an attack of intestinal colic, children have a good appetite, gain weight well [1,7, 24-27].

Simetikon has been used for about 40 years in children and adults to relieve symptoms

associated with increased gas formation. This substance is a mixture of dimethylsiloxane polymer with silicon dioxide (SiO2). The drug is chemically inert, not absorbed in the intestine, non-toxic, does not cause side effects. Getting used to it does not develop. Simetikon preparations, due to an increase in the surface tension of the liquid, destroy small gaseous bubbles in the foam with their subsequent excretion from the body. Therefore, as a rule, the pain syndrome is stopped within a few minutes. In addition, the wall digestion and absorption of food, disturbed by an excess of gas bubbles, improves. Simeticone, in addition to the carminative effect, also has a protective effect on the mucous membranes of the gastrointestinal tract, its inhibitory effect on Helicobacter pylori was shown in the experiment [1,2, 28-31]. Since one of the main complaints in patients with PD is bloating (occurs in 9 out of 10 patients), which is described as a feeling of bursting in the epigastric region, the use of means that reduce flatulence, in particular antiflatulents and enzyme preparations, is now increasingly being considered as a second line of treatment for PD. The effectiveness of some of them has already been confirmed by the methods of evidence-based medicine [1,2, 32-34]. The efficacy of simeticone in PD was studied in 4 RCTs with a total of 576 participants (266 patients in the simeticone group, 310 individuals in the placebo group). In an earlier double-blind cross-sectional study involving 24 volunteers with a history of frequent discomfort after eating, the authors compared the effectiveness of simeticone and placebo after taking a test meal. When using simeticone, they had a significant decrease in the frequency of flatulence and gas formation; at the same time, there were no significant differences in comparison with placebo in reducing the feeling of stomach overflow, stretching and pressure in the epigastrium [1,2, 35-38]. During a placebo-controlled study, the effectiveness of simeticone at a dose of 50 mg for the relief of symptoms of functional disorders from the upper gastrointestinal tract was evaluated. A significant decrease ($p<0.001$) in the severity of all symptoms was observed in the group taking simetikon (n=20), compared with the placebo group (n=21). After 5 and 10 days, the severity of gas formation, gastric overflow, bloating, flatulence, indigestion, and postprandial pain was also significantly lower in the active therapy group ($p < 0.001$). Another RCT compared the efficacy of simeticone with the prokinetic cisapride in patients with PD. After a standard diagnostic examination, including endoscopy of the upper gastrointestinal tract, and a minimum 6-week washing period, 177 patients with PD were included in the study; 173 of them were randomized and treated with simetikon (84 mg 3 r/day) or cisapride (10 mg 3 r/day) using a double imitation approach. A total of 166 patients completed the study. The intensity of symptoms was assessed on a special scale from 0 (no symptoms) to 3 (pronounced symptoms) points before the start of medication, as well as after 2 and 4 weeks. At the same time, a standard questionnaire was used, including an assessment of symptoms such as a feeling of overflow and pain in the epigastrium, gas discharge, a feeling of rapid saturation, nausea, vomiting, regurgitation, heartburn, loss of appetite, a feeling of incomplete emptying during defecation. The effectiveness of treatment was assessed by patients as “very good”, “good”, “average” or “lack of effectiveness”. After 2 and 4 weeks, respectively, 34 and 46% of patients treated with simeticone characterized the relief of symptoms as “very good” compared with 13 and 22% of patients taking cisapride ($p < 0.01$) [1, 39-42].

It is noteworthy that after 2 and 4 weeks, a positive effect of simeticone compared with cisapride on such a symptom as flatulence was noted [1, 43-46].

Later studies in a similar group compared the efficacy of simeticone with that of placebo and cisapride in patients with PD. A total of 185 patients with PD were randomized who received simeticone (105 mg 3 r/day), cisapride (10 mg 3 r/day) or placebo (3 r / day). The international “O’Brien” scale was used for the subjective assessment of 10 symptoms by patients from the upper gastrointestinal tract. The data were evaluated at inclusion in the study, as well as 2, 4 and 8 weeks after the start of therapy. After 2, 4 and 8 weeks of treatment with simeticone and

cisapride, there was a significant decrease in the severity of all symptoms compared with placebo. It was noted that 2 weeks after the start of therapy, the effectiveness of simeticone was significantly higher than cisapride (p = 0.0007), but no statistically significant differences were found after 4 and 8 weeks. In patients receiving simetikon, the effectiveness of treatment was assessed as "very good" in 46% of cases compared with 15 and 16% of patients receiving cisapride and placebo, respectively (p < 0.0001) [1, 47-50].

Currently, various dosage forms of simetikon are on the market, one of them is the drug Bobotic, which appeared on the market relatively recently [1, 51-53].

1 ml of the Bobotic contains 66.66 mg of simeticone, which is relatively more than in analog preparations, which is why the Bobotic is measured in drops. Bobotik is prescribed to children from 28 days to 2 years old for 8 drops four times a day. It can also be mixed with a mixture or boiled water. It should be noted that the Bobotic is economically consumed, easily dosed through a pipette lid; this is the most convenient to use children's dosage form - the drug does not have to be diluted, but dripped directly into the child's mouth, since it has a pleasant taste. Apply on time or at the end of feeding. Given the high concentration of simeticone in Bobotic drops, mothers, when breastfeeding, can apply the drug to the breast nipple at the end of the process [1, 54-55].

Bobotik is completely safe for babies, starting from the second month of life, so you should not be afraid of any side effects - the manufacturer claims. But, at the same time, it warns about the probability, albeit extremely low, of allergic reactions in a child [1, 56-57].

As for contraindications, it is impossible to give Bobotik to children who have been diagnosed with intestinal obstruction, obstructive diseases in the stomach and intestines and newborns with individual intolerance to the components of the drug. In all other cases, a Bobotic can become an effective means to combat intestinal colic in children [1, 58-59].

Conclusions. Based on the review and the analysis carried out, it can be concluded that the expediency and effectiveness of the use of simeticone drugs in the complex treatment of young children with intestinal colic, in older children with functional dyspepsia. The important advantages of simeticon drugs are the rapid relief of symptoms of excessive gas formation, the almost complete absence of side effects and allergic reactions, as well as good tolerability, ease of dosing. We express our gratitude to the author for sharing with their results.

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