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Features of The Course of Abdominal Syndrome in Children with Connective Tissue Dysplasia

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Abstract: The paper presents the results of a study of ileocecal reflux disease in children occurring in the context of undifferentiated connective tissue dysplasia. A more pronounced and prolonged abdominal pain syndrome localized in the right iliac region was identified in children of the main group, which was associated with phenotypic signs of connective tissue dysplasia. Inflammatory changes in the upper and lower gastrointestinal tract were revealed. Ileocecal reflux disease was combined with various developmental anomalies, accompanied by persistent recurrent abdominal syndrome.

Keywords: Undifferentiated connective tissue dysplasia; children; ileocecal reflux disease.

Introduction: Undifferentiated connective tissue dysplasia (UCTD) represents a heterogeneous group of hereditary disorders, the pathogenetic basis of which lies in individual genomic characteristics, while clinical manifestation is triggered by damaging environmental factors. Connective tissue dysplasia serves as the basis for the development of a number of chronic diseases affecting various organs and systems (1). The digestive system is one of the most pathogenetically involved systems and is inevitably affected in connective tissue dysplasia. Disorders of the gastrointestinal tract are observed in more than 70% of cases. UCTD is associated with changes in the length and size of digestive organs, such as megacolon and dolichosigma, which significantly impair their functional capacity (3). Hypomotor disorders of the gastrointestinal tract are more common in patients with UCTD. Motor-tonic dysfunction, weakness of the sphincter apparatus, and resulting reflux conditions often determine the clinical manifestations from the digestive system. The causes of reflux in patients with UCTD may include valve or sphincter insufficiency due to weakness of connective tissue structures and altered pressure gradients within hollow organs (4). Dysplasia of the upper gastrointestinal tract is reported in 3.8% of cases, and of the colon in 40.2%, often accompanied by functional disorders (5). One of the manifestations of connective tissue dysplasia is primary insufficiency of the ileocecal (Bauhin's) valve, which is a cause of small intestinal contamination. It has been established that patients with primary insufficiency of the ileocecal valve present with numerous stigmata of connective tissue dysmorphogenesis (6). However, the features of the course of ileocecal reflux disease in children with connective tissue dysplasia remain insufficiently studied. Despite its high prevalence, the clinical features of ileocecal reflux disease in children with phenotypic signs of connective tissue dysplasia have not been adequately investigated, which determined the aim of this study.

Aim

To determine the clinical features of abdominal syndrome associated with ileocecal reflux disease in children with signs of connective tissue dysplasia.

METHODS

A total of 65 children aged 6 to 14 years with ileocecal reflux disease were examined at City Children's Clinical Hospital No. 4.

The patients were divided into two groups:

Main group: 43 children with signs of connective tissue dysplasia (phenotypic score >4).

Comparison group: 22 children without signs of connective tissue dysplasia.

All children underwent clinical and anamnestic

assessment, including structured interviews with parents and children, evaluation of complaints, their nature and duration, phenotypic signs of connective tissue dysplasia, laboratory and instrumental examinations (abdominal ultrasound, gastroduodenoscopy, and barium enema study). Inclusion criteria were symptoms of ileocecal reflux confirmed by clinical, anamnestic, and instrumental data. Phenotypic manifestations of connective tissue dysplasia were assessed based on posture, body type, chest deformities, joint hypermobility, and facial and skeletal anomalies.

RESULTS AND DISCUSSION

In all children of the main group, the number of connective tissue dysplasia signs exceeded four. The most common features included thin translucent skin, scoliotic posture, funnel chest deformity, flat feet, and slender hands. In most cases, asthenic body type and undernutrition combined with muscle hypotonia were identified. Facial dysmorphisms manifested as deformed earlobes and malocclusion. Curvature of the fifth fingers, sandal gap between the first and second toes, and a longer second toe compared to the first were observed. No highly specific markers of connective tissue dysplasia were identified in children with ileocecal reflux disease, which corresponds to the concept of the absence of universal mechanisms responsible for forming a specific phenotype (7,8). The leading clinical manifestation was abdominal pain syndrome, which was significantly more frequent in the main group (95%) compared to the comparison group (77%, $p>0.0032$). Pain was of moderate intensity, localized in the right iliac region and/or to the right of the umbilicus, not associated with food intake, and persisted for a long period. On palpation, tenderness was most pronounced in the right iliac region in the main group. Children in the main group more frequently reported decreased appetite. Dyspeptic symptoms included nausea and vomiting, with no significant differences between groups. Constipation was more characteristic of children with connective tissue dysplasia. Asthenic complaints such as fatigue and irritability were also more common in the main group. Ultrasound examination revealed changes in the liver and pancreas in the form of increased vascular pattern and organ enlargement, without statistically significant differences in echostructure between groups ($p<0.05$). Gastroduodenoscopy showed a predominance of chronic superficial gastroduodenitis combined with duodenogastric reflux in children with connective tissue dysplasia. Helicobacter pylori infection was more frequently detected in the main group. According to barium enema studies, ileocecal reflux in patients with connective tissue dysplasia was significantly more often associated with intestinal anomalies such as dolichosigma and coloptosis (59%, $p<0.05$). Despite therapy, children in the main group were more frequently rehospitalized due to recurrent abdominal syndrome (21% vs. 6%, $p<0.05$).

Clinical Case

Patient B., 10 years old, was admitted with complaints of recurrent abdominal pain in the right iliac region and periumbilical area, periodic constipation, decreased appetite, and episodes of nausea over the past 10–12 months. Pain was not related to food intake and intensified during physical activity and dietary violations. Parents noted irritability and increased fatigue. Medical history: Early development was unremarkable. Family history was significant for mitral valve prolapse in the mother, varicose veins in the grandmother, and postural disorders in the sister. Two episodes of intestinal infection were reported. Physical examination: Asthenic body type, body weight below age norm. Phenotypic signs of connective tissue dysplasia included thin skin, joint hypermobility (Beighton score 7), flat-valgus feet, scoliotic posture, and funnel chest deformity. Facial features included malocclusion and a narrow palate. Abdominal examination: Tenderness along the colon and in the right iliac region, moderate bloating, no peritoneal irritation, increased peristalsis. Instrumental findings:

Gastroduodenoscopy: superficial gastroduodenitis, duodenogastric reflux, mucosal hyperemia.

H. pylori test: positive.

Barium enema: ileocecal reflux, dolichosigma, coloptosis. Laboratory findings: Mild leukocytosis, no specific biochemical abnormalities. Coprogram revealed signs of dysbiosis. Ileocecal reflux disease with chronic recurrent course. Undifferentiated connective tissue dysplasia, moderate severity. Coloptosis. Dolichosigma. Duodenogastric reflux. Chronic gastroduodenitis. H. pylori-positive. Anti-Helicobacter therapy, prokinetics, antispasmodics, dietary modification, bowel motility regulators, lifestyle and physical activity recommendations, orthopedic regimen, therapeutic exercises, and correction of dysplastic disorders (vitamin-mineral complex, magnesium, physiotherapy).

Follow-up:

After 3 months, reduction in pain syndrome, normalization of stool, decreased nausea and bloating. Follow-up imaging showed persistent but less pronounced reflux.

CONCLUSION

Children with ileocecal reflux disease associated with undifferentiated connective tissue dysplasia

demonstrate a more pronounced and persistent abdominal pain syndrome, predominantly localized in the right iliac region, with recurrent course. Constipation and asthenic complaints are characteristic features. These patients are also more prone to inflammatory changes in the upper gastrointestinal tract associated with Helicobacter pylori infection. Ileocecal reflux disease in this group is more frequently combined with intestinal developmental anomalies such as dolichosigma and coloptosis.

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