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CLINIC, DIAGNOSIS AND EFFICIENCY OF NONINVASIVE METHOD OF TREATMENT YOUNG CHILDREN WITH HAEMORRHOIDS

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Summary

Hemorrhoids have been known since ancient times. They have always been considered the prerogative of adult patients. Methods of conservative and surgical treatment of hemorrhoids in adults are still used in children and often have negative results. Pediatric surgical practice has not optimized methods of diagnosis and treatment of hemorrhoids in infants and preschool children.

Materials and methods. *The work was based on retrospective and prospective analysis of medical records and case histories of 112 children with hemorrhoids treated in the last 11 years. The number of patients under 1 year of age was 4 (0.4 %); 1-3 years – 30 (26.4 %); 3-6 years – 50 (44.6 %); 7-12 years – 16 (14.2 %); 13-18 years – 12 (10.7 %). External hemorrhoids were found in 107 (95.5 %), internal hemorrhoids in 4 (3.8 %) and combined hemorrhoids in 1 (0.9 %) patient. There were 70 (62.5 %) boys and 42 (37.5 %) girls. All cases underwent general clinical and laboratory examination, orthostatic exercise (squatting), rectal palpation, anoscopy and rectoscopy. Statistical processing of the research materials was carried out using the method of variance statistics. All values in the work are presented in the form of arithmetic mean with calculation of standard deviation within the confidence interval. For all compared values the achieved level of significance (p) was considered statistically reliable – < 0.05. Student's t-distribution was used to compare data with normal distribution of means. When comparing 2 related groups, calculations were performed using Student's paired t-criterion. Microsoft Excel and Statistica computer programs were used for statistical data processing.*

Results and discussion. *This paper presents clinical material from the examination and treatment of 112 children with hemorrhoids over the past 11 years. The authors compare the characteristics of the etiopathogenesis of hemorrhoids in children from the literature and their own research data. The proposed non-invasive compression methods in the complex treatment of hemorrhoids in children are more effective in children of early and preschool age. A study of long-term results of complex conservative treatment of 84 patients of young age with hemorrhoids showed good results in 86,9 %, satisfactory – in 9,5 % and unsatisfactory (recurrence) – in 3,6 % of patients. Surgical treatment of hemorrhoids in children was used only when conservative treatment was unsuccessful in 11 (12.6 %) patients, with good long-term results in all cases. Indications for hemorrhoidectomy were: frequent prolapse of hemorrhoids (HU). After surgical treatment, good results were obtained in all cases; no recurrence was observed. The optimization of conservative and surgical treatment, respecting the age characteristics of children, led to good results.*

Conclusions: *1. Examination of children with GU enlargement with the use of additional methods (ultrasound, RRS, FACS, PCI) of research allows to reveal and treat concomitant intestinal pathologies, which are the causes of secondary transient hemorrhoids development.*

2. For children of preschool age the most effective non-invasive method of treatment is rectal balonocompression. 3. After complex conservative treatment with rectal balonocompression of children with hemorrhoids good results were observed in 86,9 % of children, satisfactory – in 9,5 % and unsatisfactory – in 3,6 %.

Key words: *Haemorrhoids; Children; Conservative Treatment; Rectal Balonocompression.*

Actuality

Hemorrhoids are enlargement of hemorrhoidal nodes (HN), known since ancient times and always considered the prerogative of adult patients. In the domestic literature, there are few works on the study of age-specific features – diagnosis and treatment of hemorrhoids in children.

Few data on hemorrhoids in children were due to the lack of clear diagnostic criteria. Various variants of perianal protrusion and anal bleeding have often been mistakenly attributed to hemorrhoids [1, 2, 3, 4, 5].

Until recently, methods of conservative and surgical treatment of adult hemorrhoids were applied to children. Indications for surgical treatment were determined without considering the peculiarities of childhood. Methods of hemorrhoidectomy (HE) were relatively traumatic for children, inadequate perineal wound care often caused complications. Pediatric surgeons were particularly uninformed about the tactics and differentiated treatment approach depending on the stage of the disease and the age of the children. Many of them do not know specifically how to treat and manage patients with hemorrhoids, especially those of early and preschool age [6, 7, 8].

Recent proctologists believe that a good effect is possible with the help of outpatient semisurgical techniques widely used abroad [9, 10, 11, 12, 13].

To understand the peculiarities of diagnosis and treatment of hemorrhoids in children it is necessary to know about the history of pathogenesis of the disease. Among numerous theories of hemorrhoids pathogenesis the most substantiated and anatomically confirmed as congenital pathology of cavernous veins of the rectum [14, 15].

Trompetto M. et al. claimed that in children hemorrhoids often occur against the background of two-moment act of defecation, in which the child infertile pushes. As a result, intra-abdominal pressure increases with a relaxed sphincter in the empty rectum. Against the background of congenital inferiority of the venous network of the small pelvis often contributes to the formation of hemorrhoids in children. Due to the atypicality of clinical manifestations in children, this pathology was called «hemorrhoids without hemorrhoids» [16]. Therefore, some scientists proposed to classify hemorrhoids into congenital and acquired according to the etiological principle [4, 7, 14, 17].

Sandler R. S. and Peery A. F. have shown that peculiar vascular bodies in the caudal part of the rectum are special vessels and cavernous veins with intra-wall «snail» anastomoses with the arterial vessels of the rectum. In children, venous outflow from such conglomerations becomes difficult (during pushing, constipation) and dense GUs gradually form [18]. In 2/3 of cases such cavernous masses are formed in 3 groups, located at the level of blink crypts of the anal canal according to the 3 end branches (at 3, 7, 11 hours on the dial) of the upper rectal artery. These large internal GUs on the left lateral, right anterolateral and right posterolateral walls of the anal canal are the main structure of hemorrhoids. Less frequently, a scattered type of hemorrhoids is formed from individual small GUs that do not belong to these areas, which is common in children [19, 20, 21].

The development of hemorrhoids is significantly influenced by dystrophic changes in the ligamentous apparatus, where the GU increase in size, shift distally and begin to fall out of the anal canal. Gradually, with the development of dystrophic processes in the common longitudinal muscle of the submucosal layer of the rectum and Parkes' ligament, which hold the cavernous bodies in the anal canal, irreversible displacement of the GU occurs [1, 2, 3]. According to the data of some scientists, small cavernous veins are already detected in newborns, sometimes with a multidimensional structure that is very poorly developed. At the age of a few months to a year, small globular veins are found in the submucosal layer of the posterior columns, which are rather difficult to detect. By 10 years of age, the cavernous veins become larger and grouped, although they generally have a diffuse structure rather than the grouped structure seen in older children [5, 7, 22, 23, 24].

In the early stages of acute hemorrhoids (AH) in children, usually constipation, there is discomfort and pain in the anus during or after bowel movements. Anal discomfort and small arterial bleeding are experienced by older children. The external GUs gradually enlarge, shift downward during constipation, and begin to fall out around the anus, at first irregularly, then with each bowel movement. In this setting, the GUs may be trapped by the spasmodic anal sphincter. They become painful, erythematous, there is edema of the perianal tissues and there is a picture of OH in children. More often, hemorrhoidal thrombosis is confined to a single GU that is almost painless on palpation [8, 23, 25]. Thus, OH in children can be divided into 3 clinical forms: a) perianal hemorrhoidal thrombosis (rare); b) impingement of prolapsed GU with varying degrees of necrosis (very rare); c) profuse hemorrhoidal bleeding (extremely rare) [26,27]. These pathogenetic conditions are very important to consider when choosing a non-invasive method of hemorrhoids treatment in children of early and preschool age.

According to Yildiz T. et al. (2019), the results of treatment of children with hemorrhoids depend on the age and severity of clinical manifestations of the disease, appropriate combination of conservative, endoscopic and surgical methods [9]. The methods of open GE, sclerotherapy and drug treatment are described in detail. In children with complicated hemorrhoids (thrombosis), if conservative treatment is ineffective, open GE is performed [6]. Many methods of conservative treatment of hemorrhoids

in children are similar to the treatment of adults. Methods of drug treatment of adults, in most cases, are not allowed for small children, and non-invasive methods of treatment are not given much attention [6, 9, 22, 26, 27].

In paediatric surgical practice, diagnostic methods and pathogenetic treatment of haemorrhoids in children of infant, early and preschool age have not been optimized.

The purpose of the research: to improve the results of treatment of children with hemorrhoids on the basis of optimization of diagnostics and complex pathogenetic treatment in infant, early and preschool age.

Materials and Methods. The work was carried out at the Department of Hospital Pediatric Surgery of Tashkent Children's Medical Institute, based on retrospective and prospective analysis of medical records and case histories of 112 children with hemorrhoids who had been under outpatient (polyclinic and DH-Shifo) and inpatient (1 KDB of Tashkent and Samarkand OMDKB) treatment for the last 11 years.

The number of patients under 1 year of age was 4 (0.4 %); 1-3 years – 30 (26.4 %); 3-6 years – 50 (44.6 %); 7-12 years – 16 (14.2 %); 13-18 years – 12 (10.7 %). At the same time, high frequency of hemorrhoids was observed in patients aged 1-3 years and 3-6 years. Pre-school children accounted for 84 (75 %). External hemorrhoids were found in 107 (95.5 %), internal hemorrhoids in 4 (3.8 %) and combined hemorrhoids in 1 (0.9 %) patient. There were 70 (66 %) boys and 36 (34 %) girls.

The long-term results of complex conservative treatment were studied in 56 (66.6 %) of 84 treated children with preschool hemorrhoids.

All cases underwent general clinical and laboratory examination, orthostatic exercise (squatting), rectal palpation, anoscopy and rectoscopy. In addition, polyposis endoscopy (PPI) was performed when indicated to detect colonic dilatation, stenosis, prolapse, and fixation defects. Rectoscopy (RRS) was performed in all patients with hemorrhoids to exclude internal hemorrhoids. Characteristic changes in the mucosa of the rectum and sigmoid colon, contact or spontaneous bleeding leading to motor evacuation disorder or two-moment act of defecation were found. The use of ultrasound with Doppler mapping according to the method of transperineal examination allowed us to evaluate arterio-venous blood flows in 16 children, the disorder of the pelvic floor venous pool, to determine the size of the GU, hypoechogenic cavity formations in the terminal veins, thrombi in the lumen; the degree of wall elasticity under compression; the velocity of venous and arterial blood flow; the resistance index of arterial blood flow. Eleven children aged from 1 to 7 years without clinical manifestations of perineal symptoms, without constipation and other defecation disorders were examined as a control group to evaluate the results of GU echometry.

Statistical processing of the research materials was carried out using the method of variance statistics. All values in the work are presented in the form of arithmetic mean with calculation of standard deviation within the confidence interval. For all compared values the achieved level of significance (p) was considered statistically reliable – < 0.05. Student's t-distribution was used to compare data with

normal distribution of means. When comparing 2 related groups, calculations were performed using Student's paired t-criterion. Microsoft Excel and Statistica computer programs were used for statistical data processing.

Results and Discussion. Parents of children with hemorrhoids came to us with complaints of protrusion of soft tissues in the area of anus – 100 %, anamnesis of blood discharge from anus with feces was noted in 45 % of patients, but at the time of admission there was no bleeding in them, restlessness of the child was noted in 13 %. External hemorrhoids were found in all children. According to the clinical course, OH was observed in 16 (19 %) children, among them 3 (0.3 %) patients developed bleeding from dilated GU against the background of portal hypertension, in 1 (0.1 %) patient against the background of rectal hemangioma.

The main cause of hemorrhoids in preschool age was persistent chronic constipation (CC) in 44 % of patients, increased diarrhea – in 38 %, two-moment defecation – in 20 %, persistent cough – in 5 %, strained urination – in 3 %.

At the primary external and rectal examination GU were more often detected at 3, 7 and 11 hours of the conventional scale, corresponding to the localization of the hemorrhoidal cushion (HC) at 2-5 hours on the scale – in 27 (32.5 %); at 6-9 hours – in 33 (40.5 %), at 10-12 hours – in 23 (27 %). These typical localizations of GUs confirm the congenital nature of the disease. The diameter of GI ranged from 0.3 cm to 2 cm.

One GU was found in 52 (60 %) patients, two in 25 (29 %) and three in 7 (9 %). Protrusion of GU during orthostatic stress was transient in 38 (45.2 %) and permanent in 44 (52.3 %), of which 2 (2.5 %) had GU thrombosis.

Preschool children had an atypical character of hemorrhoids. In infants and toddlers it manifested imperceptibly without bleeding. Preschool children were troubled by itching of the anus. In the majority of children, the disease progressed without inflammation or with moderate inflammation of the GU with diarrhea syndrome.

In hemorrhoidal patients with persistent KS, irrigography revealed dolichosigmoid. RRS with increased diarrhea revealed a pattern of exacerbation of chronic erosive proctosigmoiditis and intestinal dysbacteriosis of 1-2 degrees.

In children of all preschool ages, the cardinal symptom of hemorrhoids was GU or GP protrusion, hemorrhoidal bleeding was very rare.

Children with hemorrhoids were treated conservatively – 28 (33.3 %); complex treatment with non-invasive methods – 55 (65.4 %); surgical treatment for elimination of rectal hemangioma with internal hemorrhoids using abdominal-promesenteric proctoplasty according to Soave-Bolei in 1 (1.1 %) patient.

In the complex conservative treatment of children with hemorrhoids, the underlying intestinal disease causing the

hemorrhoids was treated at the same time. The complex treatment included diet (gentle), sitting baths with anti-inflammatory herbs (camomile, oak bark, stinging nettle, marigold), local treatment (rectal suppositories) with an anesthetic with anti-inflammatory effect (Antigemoran, Proctosan, Anaesthesol, Anusol, Relif-advance, Hemoroid), antibacterial therapy (in case of complications), medication with venotonizing and angioprotective drugs (Detralex) and dynamic observation.

For RBC, mechanical bowel cleansing with camomile solution or 1 % hypertonic solution was performed. Then we performed non-invasive method of RBC, which includes electrophoresis with antispasmodics + rectal balonodilatation + electrostimulation for 10 days. The main indications for the use of RBC were children under 14 years of age, external and internal hemorrhoids.

In case of concomitant intestinal pathology (erosive proctitis or erosive-ulcerous proctosigmoiditis, dysbacteriosis and anal fissures with inflammatory swelling of the GU) LED laser (LEDL) was applied for 7 days. After 1-2 sessions of local treatment, a positive effect was achieved in all cases.

Treatment of hemorrhoids in preschool children has tactical peculiarities. Children aged 1-3 years were not treated surgically, since hemorrhoids were mostly of transient nature. Children were prescribed therapeutic enemas with camomile solution, suppositories (anti-hemorrhoid, hemorrhoid) and ointment (Proctosan) by non-invasive RBC method for 10 days. They helped to restore blood circulation and reduce blood congestion in the pelvic organs. After the non-invasive treatment was completed, the tone of the pelvic diaphragm, the general longitudinal muscle, the submucosa of the rectum and the ligament of Parkes, which holds the cavernous bodies in the anal canal, was strengthened, which led to the gradual disappearance of the GU.

We retrospectively studied the long-term results of complex conservative treatment in 56 (66.6 %) preschool children with hemorrhoids according to the data of questionnaires and complex examination. Good results were observed in 49 (87.5 %) patients, satisfactory in 6 (10.7 %), and unsatisfactory in 1 (1.7 %).

Conclusions

1. Examination of children with GU enlargement with the use of additional methods of research (ultrasound, RRS, FACS, PCI) allows to reveal and treat concomitant intestinal pathologies, which are the causes of secondary transient hemorrhoids development.

2. For children of preschool age the most effective non-invasive method of treatment is rectal balonocompression.

3. After complex conservative treatment with rectal balonocompression of children with hemorrhoids good results were observed in 86,9 % of children, satisfactory – in 9,5 % and unsatisfactory – in 3,6 %.

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КЛІНІКА, ДІАГНОСТИКА ТА ЕФЕКТИВНІСТЬ НЕІНВАЗИВНОГО МЕТОДУ ЛІКУВАННЯ ДІТЕЙ ДОШКІЛЬНОГО ВІКУ З ГЕМОРОЄМ

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Резюме.

Геморой відомий з древніх часів і завжди вважається прерогативою дорослих пацієнтів. Методи консервативного та хірургічного лікування геморою у дорослих до теперішнього часу застосовуються у дітей і часто мають негативні результати. У дитячій хірургічній практиці методи діагностики та патогенетичне лікування даного захворювання у немовлят, дітей раннього та дошкільного віку не оптимізовані.

Мета: покращити результати лікування дітей з гемороєм на основі оптимізації діагностики та комплексного патогенетичного лікування у немовлят, дітей раннього та дошкільного віку.

Матеріал та методи дослідження. Робота базується на ретро – та проспективному аналізі медичних спостережень 112 дітей з гемороєм, які лікувалися останні 11 років. Кількість пацієнтів віком до 1 року – 4 (0,4 %); віком 1-3 роки – 30 (26,4 %); 3-6 років – 50 (44,6 %); 7-12 років – 16 (14,2 %); 13-18 років – 12 (10,7 %). Зовнішній гемороєм виявлений у 107 (99,5 %) пацієнтів, внутрішній – у 4 (3,8 %), комбінований – у 1 (0,9 %) дитини. Серед пацієнт хлопчиків було 70 (62,5 %), дівчат – 42 (37,5 %). У всіх випадках застосоване загальне клінічне та лабораторне обстеження, проведення ортостатичних проб, пальцевий ректальний огляд, ано- та ректоскопія. Статистичну обробку матеріалів дослідження проводили з використанням методу варіаційної статистики. Всі величини в роботі представлені у вигляді середнього арифметичного з розрахунком стандартного відхилення в межах довірчого інтервалу. Для всіх порівнюваних величин статистично достовірним вважався досягнутий рівень значущості (p) – < 0,05. Для порівняння даних з нормальним розподілом середніх використовували t-розподіл Стьюдента. При порівнянні 2-х споріднених груп розрахунки проводили з використанням парного t-критерію Стьюдента. Для статистичної обробки даних використовували комп'ютерні програми Microsoft Excel та Statistica.

Результати та обговорення. У роботі представлені дані обстеження та лікування 112 дітей з гемороєм за останні 11 років. Проаналізовані власні дослідження щодо особливостей клінічного перебігу захворювання, діагностики та лікування у дітей різного віку. Неінвазивний метод ректальної балонокомпресії (РБК) у комплексному лікуванні геморою, що ми пропонуємо, є більш ефективним для дітей раннього та дошкільного віку. В результаті комплексного лікування 84 пацієнтів раннього та дошкільного віку добрі результати отримані у 73 (86,9 %) дітей, задовільні – у 8 (9,5 %), незадовільні – у 3 (3,6 %) хворих. Оптимізація комплексного консервативного лікування геморою з використанням методу РБК, з урахуванням патофізіологічних та вікових особливостей дітей раннього та дошкільного віку, дозволила отримати добрі результати неінвазивного методу лікування – ректальної балонокомпресії – у переважної більшості пацієнтів. 11 пацієнтам було застосоване хірургічне лікування з добрими віддаленими результатами у всіх випадках.

Висновки.

1. Обстеження дітей з гемороєм із застосуванням додаткових методів обстеження (ультрасонографія, RRS, FACS, PCI) дозволило виявити та пролікувати супутню інтестинальну патологію, що була причиною розвитку вторинного геморою.
2. Для дітей дошкільного віку найбільш ефективним неінвазивним методом лікування є ректальна балонокомпресія.
3. Після комплексної терапії із застосуванням ректальної балонокомпресії у дітей з гемороєм добрі результати лікування отримані у 86,9 % пацієнтів, задовільні – у 9,5 %, незадовільні – у 3,6 % дітей.

Ключові слова: гемороєм; діти; консервативне лікування; ректальна балонокомпресія.

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