



## CHANGES IN THE STOMACH AND TWO INTESTINAL MUSCLES IN CHILDREN WITH NEPHROTIC SYNDROME

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**Abstract:** Long-term treatment with immunodepressants and glucocorticosteroids in nephrotic syndrome in children causes diffuse damage to the membranes of the body, damage to the digestive system, including stomach and duodenal mucosa. For this purpose, it is important to study the pathological changes in the mucosa of the stomach and duodenum in children with nephrotic syndrome, and to develop measures for its prevention. In the article, the morphofunctional features of the digestive system, endoscopic signs of inflammatory processes in the mucous membrane of the stomach and duodenum in children aged 7 to 17 years with nephrotic syndrome are analyzed in depth.

**Key words:** Children, nephrotic syndrome, Esophagogastroduodenoscopy.

## ИЗМЕНЕНИЯ СЛИЗИСТОЙ ОБОЛОЧКЕ ЖЕЛУДКА И ДВЕНАДЦАТИПЕРСТНОЙ КИШКИ У ДЕТЕЙ С НЕФРОТИЧЕСКИМ СИНДРОМОМ

**Аннотация:** Длительное лечение иммунодепрессантами и глюкокортикостероидами при нефротическом синдроме у детей вызывает диффузное поражение оболочек организма, поражение органов пищеварения, в том числе слизистой оболочки желудка и двенадцатиперстной кишки. С этой целью важно изучить патологические изменения слизистой оболочки желудка и двенадцатиперстной кишки при нефротическом синдроме у детей и разработать меры его профилактики. В статье глубоко проанализированы морфофункциональные особенности органов пищеварения, эндоскопические признаки воспалительных процессов в слизистой оболочке желудка и двенадцатиперстной кишки у детей от 7 до 17 лет с нефротическим синдромом.

**Ключевые слова:** Дети, нефротический синдром, Эзофагогастродуоденоскопия.



**The urgency of the problem:** The number of children suffering from chronic kidney disease is increasing all over the world. Currently, nephrotic syndrome in children occurs in 12-16 cases out of 100,000 children worldwide. 60-70% of cases are relapsing, of which 85% are relapsing. [6,7,8] Mechanisms of development of nephrotic syndrome in children and factors of exacerbation are being comprehensively studied [1,2,3,6,9,11]. Immunopathological processes, hemostasiological and microcirculatory disorders observed in nephrotic syndrome, as well as long-term treatment with immunodepressants and glucocorticosteroids lead to diffuse damage to the membranes of the body, which explains the damage to the digestive system, including damage to the mucous membranes of the stomach and duodenum [1,3,5,10,11]. The analysis of the morphofunctional details of the digestive and excretory systems allows us to conclude about the similar architecture of their histological structures, similar transport system, similar principles of control of their functions, generality of physiological, microbiological and immunological processes. In this regard, the structural-functional parallelism of both systems is reflected in the similarity of pathological processes [8,9,10].

As a result of changes in the stomach and duodenum in most children with kidney diseases, the concept of nephrogastrointestinal syndrome appeared in the literature. [2,3,6,8,9,10,11]. In the genesis of this syndrome, vascular and trophic changes in the mucous membrane of the digestive tract, protein and electrolyte composition, hyperaldosteronism, and general and local immune response imbalance are associated.

Based on the above, it is important and urgent to determine the characteristics of clinical-morphofunctional changes in the organs of the gastroduodenal zone, endoscopic signs of inflammation in the mucous membrane of the esophagus, stomach and duodenum in children with nephrotic syndrome.

**The purpose of the study:** Determination of endoscopic signs of inflammatory processes in the mucosa of the stomach and duodenum in children with nephrotic syndrome.

**Material and research methods:** Esophagogastroduodenoscopy is the main instrumental method for diagnosing gastrointestinal tract pathology in both adults and children.

Esophagogastroduodenoscopy was performed according to the standard method using "OLIMPUS XP-30", "PQ-20", "GIF-70" devices (Japan). This examination included a visual (macroscopic) evaluation of the mucosa of the esophagus, stomach, and duodenum.

Endoscopic examination was performed on 126 patients aged 7 to 17 years with nephrotic syndrome. Patient children were divided into 3 groups based on the clinical forms of nephrotic syndrome. Group 1: Steroid-sensitive nephrotic syndrome n=34, Group 2: Steroid-resistant nephrotic syndrome or Frequent relapsing nephrotic syndrome n=54, Group 3: Steroid-dependent nephrotic syndrome n=38.

The obtained results and their discussion. The description of esophagogastroduodenoscopy began with a description of the condition of the esophagus.

Group 1 Steroid-sensitive nephrotic syndrome n=34 children had esophagitis in 2 cases (5.88%), and reflux esophagitis in 3 cases (8.82%).

Group 2: Steroid-resistant nephrotic syndrome or Frequent relapsing nephrotic syndrome n=54 children, 18 cases (33.3%) had esophagitis, 24 (44.44%) had reflux esophagitis.

3-Steroid-dependent nephrotic syndrome in 14 cases (36.84%) of n=38 children, pathological conditions in the form of esophagitis and reflux esophagitis were detected in 21 cases (55.26%) (Table 1).

In particular, out of a total of 126 children with nephrotic syndrome, 34 (26.98%) had esophagitis, 48 (38.98%) had gastroesophageal reflux, a total of 82 children were diagnosed with esophagitis and gastroesophageal reflux. Pathological conditions in the form of esophagitis and gastroesophageal reflux observed in the esophagus were mainly observed in groups 2-Steroid-resistant nephrotic syndrome or Frequent hardening nephrotic syndrome and 3-Steroid-dependent nephrotic syndrome.

*Results of endoscopic examination of the esophagus in children with nephrotic syndrome (n= 126), %*

| Diagnosis               | SSNS, n=34 |       | SRNS or FRNS, n=54 |       | SDNS, n=38 |       | Total n= 126 |       |
|-------------------------|------------|-------|--------------------|-------|------------|-------|--------------|-------|
|                         |            | %     | n                  | %     | n          | %     | n            | %     |
| Esophagitis             |            | 5,88  | 18                 | 33,33 | 14         | 36,84 | 34           | 26,98 |
| Gastroesophageal reflux |            | 8,82  | 24                 | 44,44 | 21         | 55,26 | 48           | 38,09 |
| Total                   |            | 14,70 | 42                 | 77,7% | 35         | 92,10 | 82           | 65,07 |

*Results of endoscopic examination of the stomach and duodenum in children with nephrotic syndrome (n= 126), %*

| Diagnosis          | Chronic gastritis |       | Chronic gastroduodenitis |       | Erosive ulcerative changes of the stomach |       | 12 digit ulcer disease |      | Total n=126 |       |
|--------------------|-------------------|-------|--------------------------|-------|---|-------|------------------------|------|-------------|-------|
|                    | n                 | %     | n                        | %     | n   | %     |                        | %    | n           | %     |
| Groups             | n                 | %     | n                        | %     | n   | %     |                        | %    | n           | %     |
| SSNS, n=34         | 4                 | 11.76 | 7                        | 20.59 | -   |       |                        |      | 11          | 8,73  |
| SRNS or FRNS, n=54 | 9                 | 16.67 | 36                       | 66.67 | 6   | 11.11 |                        | 5.56 | 54          | 42,85 |
| SDNS, n=38         | 3                 | 7.89  | 29                       | 76.32 | 4   | 10.53 |                        | 5.26 | 38          | 30,15 |
| Total              | 16                | 12.70 | 72                       | 57.14 | 10  | 7.94  |                        | 3.97 | 103         | 81,74 |

Thus, in the active stage of nephrotic syndrome in children, damage to the mucous membrane of the gastroduodenal organs was observed, and accordingly, the rate of endoscopic changes was very high in both active and silent stages of nephrotic syndrome,



which can be explained by the negative effect of pathogenetic therapy on the morphofunctional state of the stomach and duodenum.

**Conclusions:** According to the results of the esophagogastroduodenoscopy examination, endoscopic signs of inflammation in the mucous membrane of the stomach and duodenum in children with nephrotic syndrome are edema, hyperemia, as well as hemorrhage and erosion. depending on the forms, it can be concluded that it is mainly related to taking glucocorticosteroids for 6 months or more.

From the obtained results, the violation of the integrity of the mucous membrane of the upper part of the digestive tract in children with chronic gastroduodenal pathologies in children with nephrotic syndrome indicates the presence of chronic hypoxia.

From the results of endoscopic examination, a description of the macroscopic view of the gastric mucosa in children with nephrotic syndrome was obtained, which have high specificity and sensitivity for determining the degree of inflammation.

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