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Changes in the Spleen During Hepatitis

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Abstract: This article discusses the morphological changes in the spleen of children under the age of 18 with toxic hepatitis. The research results confirm the active involvement of the spleen in the pathogenesis of toxic hepatitis. Early detection of these changes is important for assessing disease severity and planning treatment strategies. Further, more extensive studies are recommended in the future.

Keywords: toxic hepatitis, children, spleen, morphological changes, lymphoid follicles, circulatory disorders, fibrotic processes, Pearson's chi-square test.

1. Relevance

Toxic hepatitis in children is an inflammatory liver disease that develops under the influence of various toxic substances. Although the morphological changes in the liver during toxic hepatitis have been well studied, data on morphological changes in the spleen remain limited [1].

However, considering the spleen's role in the immune response and its connection to the liver via the portal system, it can be hypothesized that toxic hepatitis may also affect the morphology of the spleen [2].

In toxic hepatitis, the liver undergoes the following morphological changes: **Dystrophic processes in hepatocytes:** These can range from mild changes (such as lipofuscin accumulation and loss of basophilia) to necrosis of individual cells. **Fatty degeneration:** Typically observed in a focal form, but in some cases, a combination of fatty and ballooning degeneration or even diffuse fatty degeneration may develop. **Inflammatory infiltration:** Usually moderate, involving lymphocytes, histiocytes, and fibroblasts in the portal tracts. **Stromal and reticuloendothelial system reaction:** Manifested by moderate sclerosis of the portal stroma, fibroblast proliferation, round-cell infiltration, proliferation of cholangioles, and edema of their endothelium [3,4].

Specific data on morphological changes in the spleen during toxic hepatitis in children are lacking; however, based on disease pathophysiology, the following assumptions can be made: **Hypergenesis of lymphoid tissue:** In response to liver inflammation, the spleen may react with the enlargement of lymphoid follicles, indicating an active immune response. **Sclerotic changes:** Chronic inflammation may cause fibrotic processes not only in the liver but also in the spleen, leading to tissue densification. **Vascular system changes:** Toxic injury may disrupt microcirculation in the spleen, potentially leading to congestion and the development of splenomegaly [5,6].

Currently, comprehensive information on spleen morphological changes in children with toxic hepatitis is insufficient. However, it is hypothesized that the spleen participates in the pathological process through immune and vascular mechanisms. Further studies focusing on

spleen morphology in the context of toxic liver injury are needed to better understand these changes.

2. Methods and Materials

The study was conducted in Bukhara region and involved 28 children diagnosed with toxic hepatitis and 28 healthy controls.

Pearson's chi-square (χ^2) test was used for statistical evaluation of the data.

The following criteria were assessed for morphological changes in the spleen:

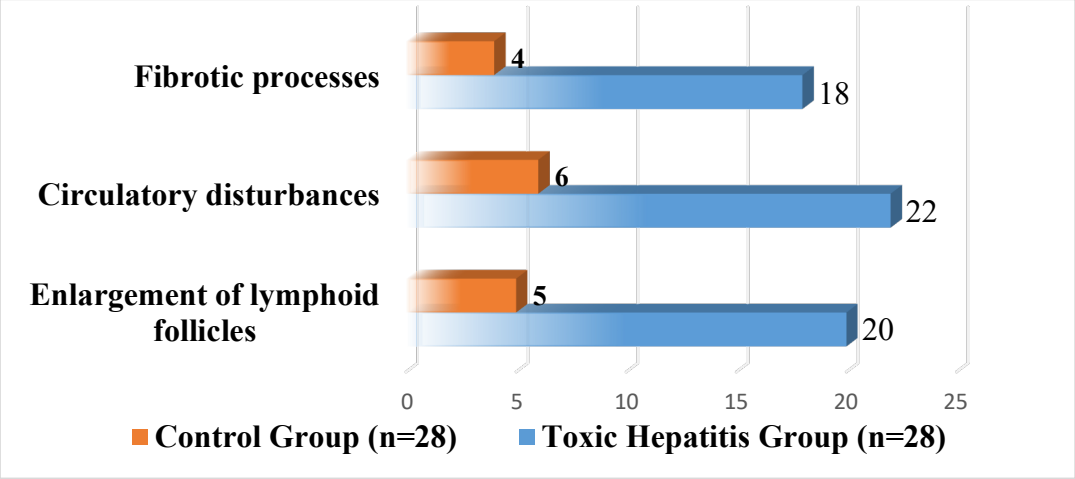
1. Changes in the size of lymphoid follicles
2. Disorders of blood circulation
3. Fibrotic processes

3. Results and Analysis

Morphological changes in the spleen were compared between children with toxic hepatitis and the healthy control group.

Morphological Changes	Toxic Hepatitis Group (n=28)	Control Group (n=28)	χ^2	p-value
Enlargement of lymphoid follicles	20 (71.4%)	5 (17.9%)	14.7	<0.001
Circulatory disorders	22 (78.6%)	6 (21.4%)	16.9	<0.001
Fibrotic processes	18 (64.3%)	4 (14.3%)	13.5	<0.001

The data showed that among the 28 children with toxic hepatitis, 20 children (71.4%) exhibited enlargement of lymphoid follicles in the spleen. Additionally, 22 children (78.6%) demonstrated circulatory disturbances in the spleen, and 18 children (64.3%) exhibited fibrotic changes. These findings highlight the significant prevalence of morphological changes in the spleen among children with toxic hepatitis, with the most common alterations being lymphoid follicular enlargement, circulatory abnormalities, and fibrotic processes.



Pearson's chi-square test results showed that there were statistically significant differences across all criteria ($p<0.001$).

4. Conclusion

The high χ^2 values identified through the chi-square test—14.7, 16.9, and 13.5—indicate that morphological changes in the spleen are significantly more pronounced in children with toxic hepatitis compared to the control group. These results confirm the active involvement of the spleen in pathological processes associated with toxic hepatitis.

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