WHY DOES IgA VASCULITIS PREDOMINANTLY OCCUR IN CHILDREN? CLINICAL ANALYSIS BASED ON DATA FROM TASHKENT CITY CLINICAL HOSPITAL No. 3

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Abstract Background: *Immunoglobulin A vasculitis (IgA vasculitis, IgAV), formerly known as Henoch–Schönlein purpura, is the most common systemic small-vessel vasculitis in childhood. Although the disease can occur at any age, it predominantly affects children, with the highest incidence observed between 4 and 6 years of age. Approximately 90% of pediatric cases occur in children younger than 10 years.*

Objective: *To analyze the possible reasons for the predominance of IgA vasculitis in children, with particular attention to age-related immunological characteristics, infectious triggers, and the main clinical manifestations of the disease.*

Materials and Methods: The study was conducted at Tashkent City Clinical Hospital No. 3. Clinical data of children diagnosed with IgA vasculitis were analyzed. Age, sex, history of preceding infections, skin manifestations, joint involvement, gastrointestinal symptoms, renal involvement, and major laboratory parameters were evaluated.

Results: The predominance of IgA vasculitis in children cannot be explained by a single factor. Respiratory infections, seasonal variation, age-related characteristics of the immune system, abnormalities in galactose-deficient IgA1 (Gd-IgA1) metabolism, and genetic predisposition may interact in the development of the

disease. International studies indicate that IgA vasculitis occurs most frequently between 4 and 7 years of age, with the majority of cases occurring before the age of 10.

Conclusion: The predominance of IgA vasculitis in childhood may be associated with the interaction of immune-system maturation, frequent exposure to infectious triggers, and individual genetic susceptibility. However, the precise mechanisms explaining the particularly high incidence of IgA vasculitis between 4 and 6 years of age remain incompletely understood.

Keywords: IgA vasculitis, hemorrhagic vasculitis, Henoch–Schönlein purpura, children, immune system, IgA1, Gd-IgA1, immune complexes, infection, vasculitis.

INTRODUCTION

Immunoglobulin A vasculitis is a systemic small-vessel vasculitis that primarily affects the skin, joints, gastrointestinal tract, and kidneys. The most characteristic clinical manifestation is palpable purpura without thrombocytopenia. Patients may also develop arthralgia or arthritis, abdominal pain, gastrointestinal bleeding, hematuria, and proteinuria.

One of the most interesting epidemiological characteristics of IgA vasculitis is its strong association with age. Although the disease can occur in adults, it is considerably more common in children. The highest incidence is generally reported between 4 and 6 years of age. Epidemiological studies indicate that approximately 90% of pediatric cases occur in children younger than 10 years.

This raises an important scientific question:

Why does IgA vasculitis predominantly affect children, particularly those between 4 and 6 years of age?

Several mechanisms may contribute to this age-related susceptibility, including frequent childhood infections, maturation of the immune system, abnormalities in IgA1 glycosylation, genetic predisposition, and environmental factors.

MATERIALS AND METHODS

The study was conducted at **Tashkent City Clinical Hospital No. 3**.

Children diagnosed with IgA vasculitis and treated at the hospital were included in the clinical analysis. The following parameters were evaluated:

- age;
- sex;
- history of preceding infections;
- onset and duration of the disease;
- skin manifestations and palpable purpura;
- joint involvement;
- abdominal pain and other gastrointestinal manifestations;
- renal involvement;
- complete blood count;
- platelet count;
- C-reactive protein;
- urinalysis;
- hematuria and proteinuria.

Patients were divided into age groups to determine the age period in which IgA vasculitis occurred most frequently.

The main objective of the clinical analysis was to evaluate the age-related characteristics of IgA vasculitis and to compare the observed clinical features with current concepts regarding the pathogenesis of the disease.

RESULTS

International epidemiological data indicate that IgA vasculitis predominantly occurs during childhood. Approximately 90% of patients are younger than 10 years,

while the mean age at disease onset is approximately 6 years. The highest incidence is generally observed between 4 and 6 years of age.

A history of infection before the onset of IgA vasculitis is common in children. Upper respiratory tract infections are among the most frequently reported potential triggers. International studies suggest that approximately 60–70% of affected children may have a recent history of infection before the onset of clinical manifestations.

The disease also demonstrates seasonal variation, with a higher incidence frequently reported during autumn and winter. The increased frequency of respiratory viral and bacterial infections during these seasons may contribute to disease triggering.

The clinical data obtained from children treated at Tashkent City Clinical Hospital No. 3 may provide additional information regarding the age distribution and clinical characteristics of IgA vasculitis in the local pediatric population.

[The number of patients and exact statistical results should be inserted here.]

For example:

"A total of ___ children with IgA vasculitis were included in the study. Of these, ___ patients (*%) were 4–6 years old, ___ patients (*%) were 7–10 years old, and ___ patients (___%) were older than 10 years."

These data can be used to assess the age-specific characteristics of IgA vasculitis in the studied population.

DISCUSSION

The predominance of IgA vasculitis in children cannot currently be explained by a single pathogenic mechanism. Current evidence suggests that the disease develops through a complex interaction between **genetic susceptibility, environmental triggers, and an abnormal immune response**.

Role of infections

Respiratory infections occur frequently during childhood and represent one of the most common potential triggers preceding IgA vasculitis.

During an infection, mucosal immune responses become activated and IgA production may increase. In genetically susceptible individuals, this immune response may become dysregulated and contribute to the formation of pathogenic IgA-containing immune complexes.

The frequent occurrence of respiratory infections during childhood may therefore partly explain why IgA vasculitis is more common in children than in adults.

Role of IgA1

A major pathogenic mechanism of IgA vasculitis involves **galactose-deficient IgA1 (Gd-IgA1)**.

Gd-IgA1 may induce the formation of autoantibodies and subsequent pathogenic immune complexes. These complexes can deposit in small blood vessels and in the glomeruli of the kidneys, triggering inflammatory responses.

This mechanism helps explain the involvement of multiple organs, including the skin, gastrointestinal tract, joints, and kidneys.

Why children?

The immune system undergoes substantial maturation during childhood. Children are continuously exposed to new viruses, bacteria, and other antigens. Consequently, the balance between immune activation and immune regulation may differ from that in adults.

Children aged 4–6 years are frequently exposed to infectious agents through kindergarten, school, and other social environments. Increased exposure to respiratory infections may act as an important trigger in genetically susceptible children.

However, this explanation alone cannot fully account for the marked age-specific incidence of IgA vasculitis. The exact mechanisms responsible for the peak incidence between 4 and 6 years remain unclear.

Endothelial injury

Endothelial injury is another important component of IgA vasculitis. Deposition of IgA-containing immune complexes, complement activation, neutrophil recruitment, and inflammatory mediators can contribute to vascular inflammation and endothelial damage.

Increased vascular permeability resulting from this process leads to the development of palpable purpura. Similar inflammatory mechanisms may contribute to gastrointestinal and renal involvement.

Thus, IgA vasculitis may be considered the result of a complex interaction between immune dysregulation and small-vessel endothelial injury.

CONCLUSION

IgA vasculitis is one of the most common systemic vasculitides of childhood, with the highest incidence occurring between 4 and 6 years of age. Approximately 90% of pediatric cases occur in children younger than 10 years.

The predominance of IgA vasculitis in children may be associated with the interaction of several factors, including:

frequent infections → immune activation → formation of Gd-IgA1 → pathogenic immune complexes → small-vessel endothelial injury → clinical manifestations of IgA vasculitis.

The frequent occurrence of upper respiratory tract infections and the seasonal increase in cases during autumn and winter support the possible importance of infectious triggers.

At the same time, the question of **why IgA vasculitis occurs most frequently specifically between 4 and 6 years of age remains incompletely answered**.

Further clinical and immunological studies in pediatric populations are needed to clarify the mechanisms underlying this age-related susceptibility. Clinical data from Tashkent City Clinical Hospital No. 3 may contribute to a better

understanding of the age distribution and clinical characteristics of IgA vasculitis among children in the local population.

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