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The Incidence of Pathology of Adnexal Apparatus of the Eye Among Children and Adolescents with Tuberculosis

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Abstract Pathology of the adnexal apparatus of the eye is widespread among children and adolescents and remains one of the most pressing problems in pediatric ophthalmology. This article provides information on the incidence of inflammatory diseases of the adnexal apparatus of the eye in children and adolescents with tuberculosis. Studies have shown that the most common pathologies of the adnexal apparatus of the eye in children and adolescents with tuberculosis were blepharitis and chronic conjunctivitis, which amounted to 45.9±1.2%. The incidence of blepharitis was 25.7±1.1%, the incidence of chronic conjunctivitis among children and adolescents with tuberculosis was 20.0±1.0%. Inflammatory diseases of the adnexal apparatus of the eye can cause many complications and reduce the quality of life in children and adolescents with tuberculosis. Therefore, it is necessary to carry out timely diagnosis, treatment and prevention of complications of these diseases.

Keywords Blepharitis, Chronic conjunctivitis, Incidence, Children, Adolescents, Tuberculosis

1. Introduction

Pathology of the adnexal apparatus of the eye - lacrimal organs, eyelids and conjunctiva - constitutes the largest group of diseases, from 10 to 35% in the overall structure of morbidity of the organ of vision [1,2,5].

The peculiar anatomical, topographical and morphological features of the structure of the adnexal apparatus of the eye largely determine the uniqueness of the course of pathological processes in them [3,6]. In addition, despite the successful achievements in modern ophthalmology, the treatment of diseases of the eyelids and conjunctiva of inflammatory origin in children and adolescents with common infectious diseases is still of great relevance [4,9].

Blepharitis is one of the most common ophthalmological diseases among children and adolescents, manifested by inflammation of the eyelids. Inflammation of the marginal areas of the eyelids in most cases is a chronic disease that is quite difficult to treat. The persistent recurrent course of blepharitis contributes to the development of conjunctivitis, keratitis and weakened vision in children and adolescents [10].

Topicality of the researchis that the incidence of pathology of the adnexal apparatus of the eye is growing due to the increase in their prevalence among children and adolescents [7,8].

Purpose of the study: To study the incidence of inflammatory diseases of the adnexal apparatus of the eye among children and adolescents with tuberculosis.

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2. Materials and Methods of the Research

Children and adolescents with tuberculosis at the age of 1 to 17 years who were being treated for tuberculosis at the Andijan regional anti-tuberculosis dispensary were examined. A comprehensive ophthalmological examination included: determination of visual acuity without and with correction, skiascopy, autorefractometry, biomicroscopy, study of binocular functions, direct and reverse ophthalmoscopy.

Clinical, biochemical, immunological, microbiological studies and examination by specialists were also carried out.

3. Results and Discussion

Out of the 1690 examined children and adolescents with tuberculosis (985 boys and 705 girls) aged from 1 to 17 years, chronic inflammatory diseases of the adnexal apparatus of the eye were identified in 775 children and adolescents with tuberculosis, which amounted to 45.9 ± 1. 2% of the total number of those examined.

During the examination, blepharitis was identified in 435 children and adolescents with tuberculosis, which is 25.7±1.1% of the total number of those examined.

As can be seen from Table 1, with increasing age there was an increase in the detection rates of blepharitis, and with each age group the increase was more significant.

In the age group of 1-3 years, the detection rate of blepharitis was 5.1±2.5%, and in the age group of 4-6 years, the detection rate was 7.8±1.6%.

Table 1. The detection rates of blepharitis in children and adolescents with tuberculosis depending on age and gender

Age	Boys		Girls		Total	
	Abs.	%	Abs.	%	Abs.	%
1-3 yearsold	3	7,9±4,4	1	2,5±2,5	4	5,1±2,5
4-6 years	16	8,2±1,9	6	6,9±2,7	22	7,8±1,6
7-9 years	50	16,2±2,1	37	18,4±2,7	87	17,1±1,7
10-14 years	140	47,8±2,9	92	35,4±3,0	232	41,9±2,1
15-17 years	58	38,7±4,0	32	27,3±4,1	90	33,7±2,9
Total	267	27,1±1,4	168	23,8±1,6	435	25,7±1,1

In the age group of 7-9 years, the detection rate was 17.1±1.7%. In the age groups from 1-3 years to 4-6 years, the overall rates of detection of blepharitis increased by only 52.9%, while by the age of 7-9 years the rates increased by 119.2%, i.e. more than 2 times.

Further, by 10-14 years, the overall detection rates were 41.9±2.1%, an increase of 145.0% compared to the previous age group. However, in the next age interval - from 10-14 to 15-17 years, there was a decrease in overall indicators by 19.6% and amounted to 33.7±2.9%.

The analysis of the incidence rates of blepharitis in the studied group of patients, taking into account gender, showed that in different age groups the ratio of rates between boys and girls was different, with a predominance of rates in boys, but the differences were statistically insignificant (P>0.05). The overall incidence rates of blepharitis in boys were also statistically insignificantly higher than in girls and amounted to 27.1±1.4% and 23.8±1.6%, respectively (P>0.05).

The comparative analysis of age-specific indicators allowed us to conclude that the dynamics of both increase and decrease in indicators in the groups of boys was less significant compared to the groups of girls, but the differences were statistically insignificant (P>0.05).

The highest frequency of detection of the disease was established at the age group of 10-14 years in both boys (47.8±2.9%) and girls (35.4±3.0). In girls this indicator was statistically significantly lower than in boys (P<0.05)

From the above, we can conclude that among children and adolescents suffering from tuberculosis, the most significant risk of blepharitis is in the age groups of 10-14 (RR=1.286, 95% CI 0.978-1.690) and 15-17 years (RR=1.282, 95% CI 0.975-1.686) compared with other age groups.

During the studies, chronic conjunctivitis was diagnosed in 339 cases (43.7%). Analysis of age-specific indicators in the gender aspect did not reveal statistically significant differences (Table 2).

The analysis of age-specific indicators in the gender aspect did not reveal statistically significant differences (Table 2).

The dynamics of age-specific indicators showed that between the age groups of 1-3 years and 4-6 years, the rate of decline in boys was 22.8%, and in girls it was only 8.0%.

Table 2. The detection rates of conjunctivitis in children and adolescents with tuberculosis depending on age and gender

Age	Boys		Girls		Total	
	Abs.	%	Abs.		Abs.	%
1-3 years old	3	7,9±4,4	3	7,5±4,2	6	7,7±3,0
4-6 years	12	6,1±1,7	6	6,9±2,7	18	6,4±1,4
7-9 years	41	13,3±1,9	33	16,4±2,6	74	14,5±1,6
10-14 years	89	30,4±2,7	82	31,5±2,9	171	30,9±2,0
15-17 years	38	25,3±3,5	32	27,3±4,1	70	26,2±2,7
Total	183	18,6±1,2	156	22,1±1,6	339	20,1±1,0

In the next age interval - from 4-6 to 7-9 years, there was an increase in the incidence of conjunctivitis: in boys by 118.0%, and in girls - by 137.7%. The indicators for the next age period were the highest - 30.4±2.7% in boys and 31.5±2.9% in girls. The rate of increase in indicators in the age group of 10-14 years was: 128.6% in boys and 92.1% in girls. By the next age groups, the indicators decreased, and the rate of decline was 16.8% for boys, and 13.3% for girls. However, in all age groups, the indicators for girls were statistically insignificantly higher compared to boys (P>0.05).

The analysis of the dynamics of general indicators by age groups showed that from the youngest age group from 1-3 years to 4-6 years there was a decline in the detection rates of conjunctivitis by 16.9%, while by the next age period - 7-9 years - the indicators increase by 126.6%.

In the age group of 10-14 years, the detection rate was the highest - 30.9±2.0%, the growth rate was 113.1%.

Further, by the age of 15-17 years, the level decreased by 15.9%. The presented data allow us to conclude that, starting from 7 years of age to 15 years, there is a significant jump in the detection of conjunctivitis in children and adolescents with tuberculosis with a further slight decrease in indicators, which continue to remain at the significantly high level relatively to younger age groups - from 1 to 6 years years, the differences were statistically significant (P<0.001).

In general, as can be seen from Table 2, chronic conjunctivitis among boys was detected in 18.6±1.2%, and among girls - in 22.1±1.6% out of the total number of boys and girls examined.

4. Conclusions

Thus, our studies have shown that the incidence of chronic inflammatory diseases of adnexal apparatus of the eye among children and adolescents with tuberculosis is 45.9±1.2%. The incidence of blepharitis is 25.7±1.1%, the incidence of chronic conjunctivitis among children and adolescents with tuberculosis is 20.0±1.0%.

Inflammatory diseases of the adnexal apparatus of the eye can cause many complications and reduce the quality of life in children and adolescents with tuberculosis. Therefore, it is necessary to carry out timely diagnosis, treatment and prevention of complications of these diseases.

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