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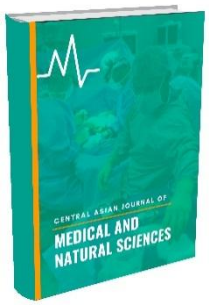

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Clinical features of viral infection on the skin in children and pathogenetic treatment

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ABSTRACT: *The viral dermatoses are commonly spread among children. The article below describes a review and clinical observation of viral effects of the skin and contemporary treatment methods.*

Key words: *viral dermatoses, children, clinical manifestation, CO2 laser. methods of treatment*

Introduction.

Dermatoses of viral etiology are very common in children and constitute a fairly large and often occurring group of skin diseases. If in adult's viral skin diseases make up 3-4%, then in children- up to 9.5% of all dermatoses [3,17]. These include herpes, viral exanthemas, molluscum contagiosum, warts, and genital warts [2,6].

Despite the fact that the introduction of a viral infection can occur in utero, at the time of delivery or in the first days of the child's life, the disease does not develop, since the mother's blood receives antiviral antibodies, which creates passive immunity in the body of the fetus and child [2,3,6,17]. By the beginning of the second year of life, this immunity weakens, which leads to the possibility of the development of viral dermatoses. In the future, the ways of penetration of the virus into the child's body are numerous: through the skin, infected objects, mucous membranes, and airborne droplets. Most often, the first manifestations of viral dermatoses in children are observed from the 5th year of life.

Many authors note a prolonged, recurrent course of viral diseases among children, which is difficult to respond to traditional therapy, which has become one of the most significant medical and social problems of modern healthcare [1,7,10,14]. I would particularly like to highlight a group of

nosology's, caused by human papillomavirus (HPV), which have become widespread in recent years among children, even infants, and represent the greatest difficulties in treatment for practitioners. One of the main reasons for the spread of this infection among children is the erroneous opinion of most doctors, who traditionally consider HPV a banal skin infection and therefore treatment is often limited only to the destruction of warts without eliminating provoking factors, which leads to an increase in recurrent and common forms of PVI. Indeed, in most cases, viral neoplasms are localized in accessible places for removal and are usually limited in nature. However, recently we are increasingly having to deal with unusual situations, and first of all it concerns the localization of rashes on the face and anogenital area. Anogenital warts are perceived by many patients and their parents as something "shameful", often leading to severe psychosomatic disorders. The reasons for such clinical situations are late referrals for viral dermatoses, as well as the presence of such a disease in close relatives. As a rule, first rashes are localized on the patient's hands, and then there is autoinoculation of viruses or infection of the child occurs by contact and household means [8,13,15,16,19,20]. Complications of treatment with such localities include increased sensitivity of the skin and mucous membranes, a higher risk of secondary bacterial complications, and the possibility of significant cosmetic defects after removal of viral neoplasms.

Many of the existing methods of treatment of PVI are unacceptable for use in children or insufficiently effective with many side complications and short-term therapeutic effects, which makes the problem of finding new treatment methods relevant [4,59,11,12,18]. An important condition for successful treatment of children with PVI is combination therapy with a full examination and treatment of inter current diseases, mandatory appointment of course immune-correction and the most sparing methods of removal (laser or radio surgical technologies) with adequate pain relief.

The purpose of the study

Study of clinical features of the course and development of pathogenetic therapy of papillomavirus skin infection in children.

Materialsand methods

To achieve this goal, 78 children and adolescents aged 2 months to 18 years with active manifestations of PVI were examined, including 42 boys and 36 girls. This confirms the well-known pattern that a more frequent incidence of cutaneous forms of PVI is observed among boys, while papillomavirus infection of the mucous membranes more often affects girls. The research was conducted in the consulting and diagnostic polyclinic, departments of pediatric dermatology and plastic surgery of the TashPMI clinic and private clinic HAYAT MEDICAL CENTRE.

The analysis of observations was carried out according to the following parameters: clinical characteristics: type of warts (common, flat, plantar, genital warts); stage: progressive (the appearance of new elements at the time of treatment), stationary (the existence of warts in an unaltered state for a year and more); prevalence: common (more than 2 anatomic areas); restricted (rash located on 1 or 2 anatomic areas); the location (genitals, face and neck, upper and lower limbs, hand, foot, torso); the type of treatment previously received: (surgical excision, destruction-chemical, physical, liquid nitrogen, keratolytics, immunotherapy); number of relapses: after previous treatment; General health: presence of chronic diseases, infections.

Resultsand discussions

Of the 78 children we observed with PVI, 47 had ordinary warts, 12 had plantar warts, 10 had flat warts, and 9 had anogenital warts (table 1).

An analysis of various clinical varieties of warts, depending on their number, prevalence and stage, showed that common warts were mostly multiple (40 %), equally limited (32 %) and widespread (28.2 %), and mostly in the progressive stage (46.2 %) (Figure 1,2). Plantar and flat warts were multiple (10.2 %), were in a progressive stage (15.5 %) and (12.8 %) (Figure 3,4,5,6). But if plantar warts were located in a limited area (15.5%), then flat warts were prone to spread (10.2 %). Of the 9 cases of anogenital warts7 episodes were observed in girls and here,

Table 1.

Clinical characteristics of indicators of papilloma virus infection in children

Type of warts	**The number**				**The prevalence**				**Stages**			
	Individual orders		**Multiple**		**Restricted**		**Spread out**		**Progressive**		**Stationary**	
	n	%	n	%	n	%	n	%	n	%	n	%
Ordinary shares	16	20,4	31	40	25	32	22	28,2	36	46,2	11	14
Plantar fasciitis	4	5	8	10,2	12	15,5	0	0	12	15,5	0	0
Flat	2	2,6	8	10,2	2	2,6	8	10,2	10	12,8	0	0
Anogenitalina	2	2,6	7	9	6	7,7	3	3,8	9	11,5	0	0
Total:	**24**		**54**		**45**		**33**		**67**		**11**	

despite the prevailing limitation of the process (7.7%), the rashes were mostly multiple (9%) and tended to progress (11.5) (Figure 7.8). Our data on the occurrence of wart varieties in children coincide with the literature data. Primary manifestation of the disease was observed in all age groups, but most often at the age of 7 and 12 years. This is probably due to the fact that at the age of 7, a child enters a school group, where the probability of infection with papillomavirus increases, and at 12 years - hormonal instability and increased stress situations that significantly reduce the child's immune resistance. When analyzing the topography of rashes, the advantage of acral localization (head, face, palms and feet) was revealed, which accounted for 63 (81%) of patients. Such a characteristic feature observed in our group of patients with the prevalence of acral localization of lesions, tells about the location of the lesions close to the entrance gate of HPV, i.e. transmission contribute to frequent micro trauma which is typical for behavior of children and it highlights the role of local immunity in the development process. Of the 9 patients we observed with anogenital warts, 7 cases occurred in infants and here the source of infection was the next of kin, caring for children who had ordinary warts on their hands. The remaining 2 cases were observed in adolescents, where infection occurred as a result of autoinoculation of viruses from other anatomical sites, their same body. Our data on possible ways of HPV infection in children are also supported by literature data. When conducting a full survey children were found to have concomitant chronic dermatoses in 29 (39%) patients (atopic dermatitis, skin eczema, seborrhea, xerosis:, acne , etc.), in 18 (23%) patients revealed the presence of hyperhidrosis of the palms and soles that indicated the presence of neuroendocrine disorders in 13 (16,6 %) chronic diseases of the upper respiratory tract in 12 (15.3 per cent) had

associated lesions of molluscum contagiosum and herpes virus infection (table 2). Analysis of the immunogram showed the presence of changes in 31 (37 %) children, with a shift of the ratio CD4/CD8.

Table 2.

Indicators of concomitant diseases in children with papilloma virus infection

№	Concomitant diseases	n	%
1	Atopicdermatitis, Dyshidroticeczema Seborrhea Xerosis Acne	29	39.0
2	Hyperhidrosis	13	16.6
3	Contagious mollusc Recoverya infection	12	15.3

It seems that thepresence of these dermatoses and inflammatory changes on the skin and mucous membranes are factors that contribute to the introduction and autoinoculation of the virus as a result of scratching on the skin with a further imbalance of local immunity. A simple comparison showed that it was in these children that PVI is more common, actively occurring and more often resistant to destructive methods of treatment. Of the 78 children observed, 32 (41 %) had previously received treatment, which in 14 cases was carried out by their parents independently in the form of treatment of warts with solutions based on trichloroacetic acid or celandine. And the rest of the children, the therapy was carried out in medical institutions and of them, in 9 cases of diathermocoagulation of warts, 7 cases of destruction with liquid nitrogen and 2 cases of surgical excision of warts were performed. But despite the fact that sessions were conducted on average from 2 to 8 times in the subsequent rashes in the coming weeks or months recurred. Hence, it can be seen that in the case of a chronic resistant course of PVI, simple destruction of warts is ineffective, and treatment should be comprehensive, including immunecorrective therapy. Therefore, an important point that allows to minimize relapses is primarily the need to eliminate or reduce the effect of provoking factors (concomitant diseases). A basic method is the combined use of methods of destruction of viral neoplasms with the use of immune drugs of both local and General antiviral action. A rational approach is considered to be the combined use of antiviral and immunomodulatory agents. Therefore, the treatment of observed children was carried out comprehensively in three stages, combining the systemic use of the drug Groprinosin (active substance inosin pranobex), which has an immunomodulatory effect, stimulates the activity of macrophages, lymphocyte proliferation and cytokine formation, activates the proliferation of T-lymphocytes, T-helper cells, balances the balance of cellular and humoral links in the immune system. It has both direct and indirect antiviral action. Groprinosinis available in suspension form for children under 6 years of age and in tablet form for older children. This allows, on the one hand, to prescribe it in any age group of children, and on the other — to minimize side effects. Locally-applied Viferonovaya (interferon-A2B) ointment as the most effective means for local therapy is a natural "antiviral antibiotic", actively involved in cytolysis of the infectious origin. When applied externally, the drug should be applied not only to the foci of viral damage, but also to the apparently healthy skin around them. In this case, local forms of

interferon are prescribed in a continuous mode, both before and after the destruction of rashes in order to treat and prevent relapses of warts with various localization.

At the first stage after the examination and diagnosis of PVI the drug Groprinosin was prescribed 50 mg per kilogram of body weight divided into three doses for 10 days, three courses according to the scheme with a 30-day break. Locally, interferon-alpha-2b preparations were prescribed for pathological foci in the form of ointments or gels 3 times a day. In stage II, i.e. on the 6th week of treatment against the background of the second 10-day course of complex therapy, CO2 laser wart destruction was performed. Today, the optimal method of combining immunocorrective therapy and local wart destruction is laser. After removing warts, it is necessary to prescribe drugs that improve reparative processes in the skin, as well as disinfectants or antibacterial agents. At stage III, four weeks after laser destruction, a preventive10-day course of immunotherapy at the dosages indicated above.

Immediately after the end of therapy, complete clinical recovery was observed in 71 (91%) patients. Relapses of HPV manifestations in patients for the first time 6 months after the complex treatment were observed in 13 (16.6%) patients. Side effects and allergic reactions when using the drug Groprinosinand topical use on pathological foci of interferon-A2B in the form of ointments or gels were not observed.

Thus, treatment of children with PVI manifestations should be comprehensive and include mandatory elimination or reduction of provoking factors (concomitant diseases) with the combined use of methods of destruction of viral neoplasms with a CO2 laser and the use of immune drugs of both local and General antiviral action, are highly effective and can be recommended for use in clinical and outpatient practice.

Conclusions

Thus, thetreatment of dermatoses of viral etiology should be carried out rationally with the combineduse ofantiviral and immunomodulatory agents. For this purpose, treatment should be carried out in a complex, step-by-step manner, with the combined use of systemic drugs.

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