

Immunological Disorders in Men Patients with Anogenital Warts

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Abstract

Anogenital warts (AV) or human papillomavirus infection (PVI), along with genital herpes, HIV infection, molluscum contagiosum, hepatitis B, and cytomegalovirus infection, are common sexually transmitted viral infections (STIs). In the pathogenesis of PVI, the leading role is given to disorders of the immune system, primarily its cellular department. The aim of the study was to study immunological changes in men with papillomavirus infection (genital warts). Under observation were 47 men with OK, whose ages ranged from 18 to 42 years. Thus, studies have shown that among men in the Republic of Tajikistan, the most common STIs of viral origin (AB - OK) have a certain distribution, they occur, in most cases, in the form of mixed infection with other, more often bacterial STIs. In the pathogenesis of AD, immunity disorders are important, and must be taken into account in the treatment of patients.

Keywords: *anogenital warts, immunity.*

Introduction

Relevance. Anogenital Warts (AW) or Papilloma Viral Infection (PVI), along with genital herpes, HIV infection, molluscum contagiosum, hepatitis B, and cytomegalovirus infection, are common sexually transmitted viral infections (STIs) [2, 5]. The etiology of AW is the human papillomavirus (HPV), which is considered the most common viral infection of the genital organs in Russia, the United States, and many other countries, registering 3-4 and 6-8 times more often than gonorrhea and syphilis, respectively. HPV belongs to the papillomavirus family, consisting of 5 genera, including 27 species, in which more than 170 strains (types) of the virus have been isolated. AW, which is often called genital warts (AC), is most often caused by HPV types 6, 11, 16, 18, 31, and 33 [1, 6]. PVI is of great medical and social importance since in 10% of men and 20% of women it is the etiology of cancer of the genitourinary organs. Every year in the world more than 32 million people are ill with AW, and about 750 thousand cases of cancer are associated with HPV every year.

The incubation period of the infection depends on the state of immunity and can range from 2-3 weeks

to several years. In most cases, PVI is chronically recurrent in nature, and this, according to many studies, is due to the fact that AB often in the same patient is combined with other viral or bacterial STIs (mixed infection), and also with the presence of many patients with disorders of the immunological reactivity of the body. It is typical for PVI that, in addition to the clinically pronounced course of the disease, there are a large number of mild (subclinical) and latent forms of infection [1, 2].

In the pathogenesis of PVI, disorders of the immune system, primarily its cellular department, play a leading role, but there is no consensus among researchers [3, 4].

The aim of the study was to study immunological changes in men with papillomavirus infection (genital warts).

Materials and Methods

Under observation were 47 men with OK, whose ages ranged from 18 to 42 years. There were 21 (44.7%) patients aged from 18 to 25 years, 20 (42.5%) - from 26 to 35 years old, and 6 (12.8%) - over 35 years old. The mean age of the patients was 26.8 ± 0.8 years (make a drawing)

The duration of the illness ranged from a few weeks

to 2 or more years. 16 (34%) patients were ill from 6–8 weeks to six months, 15 (31.9%) patients were ill from 6 months to 1 year, 11 (23.4%) patients were ill from 1 to 2 years, 5 (more than 2 years) (10.6%).

Patients had different clinical forms of OK, with the location of the elements of the rash on the skin both in the genital area and in other areas close to them. Localization of OK on the skin of the genitals was found in 31 (66%) patients, extragenital - in 16 (34%). In the genital area, in 13 (27.7%) patients with papilloma, PCs were located on the skin of the body of the penis (corpus penis), in 5 (10.6%) - on the skin of the coronary sulcus (sulcus coronarium penis), in 3 (6, 4%) - on the head of the penis (glans penis), in 7 (14.9%) - in the root of the penis (radix penis) and pubic region (region pubis), in 3 (6.4%) - in the outer openings of the urethra (ostium urethrae externum). In 11 (23.4%) patients with extragenital localization of the rash, OCs were determined in the anal-perianal region (region perianalis), in 6 (12.8%) - in the perineum (draw a picture)

Patients had different clinical forms of OK (typical, papular, flat, hyperkeratotic) (draw a picture)

A typical form of OK was detected in 29 (61.7%) patients. It manifested itself in papules from pink to grayish-red in patients with a short course of the disease (up to six months), and relatively old elements had a color from whitish flesh to reddish brown. The papules ranged in size from a pinhead to a lentil, irregularly shaped, and raised above the surface of the skin. Rashes in most patients were isolated, sometimes grouped in an amount of 5 to 15 nodules, sometimes merged into plaques with a diameter of 6-8 mm to 2 cm. In some patients, nodules on the skin of the root of the penis, mainly on the ventral surface in the crease with the scrotum or in the perianal region were elongated in the form of papillae, merged, forming tumor-like growths resembling cauliflower or cockscomb. The elements of the rash in most patients had no subjective sensations. In some patients with localization of rashes in the perianal region or the root of the penis, maceration of the skin was observed, which was accompanied by a burning sensation or itching, discomfort.

In 7 (14.9%) patients, a popular clinical form of OK was observed, which was characterized by nodules the size of millet grains, which had a smooth surface without scales. 6 (12.8%) patients had a hyperkeratotic form of infection, which appeared as papules, on the surface of which There was a pronounced hyperkeratosis with horny layers. The flat form of the disease was determined in 5 (10.6%)

patients, which manifested itself in pink-brown spots that almost did not rise above the skin surface.

For the diagnosis of AW and other STIs in patients, microscopic and PCR (polymerase chain reaction) research methods were used.

Immunological studies determined the absolute and relative content of lymphocytes in peripheral blood, CD3 (T-lymphocytes), CD19 (B-lymphocytes), subpopulations of T-lymphocytes (CD4 - T-helpers), (CD8 - T-suppressors), serum immunoglobulins A, M, G, circulating immune complexes (CIC), phagocytic activity of peripheral blood neutrophilic leukocytes and phagocytic number. The quantitative content of CD3, CD4, CD8, and CD19-lymphocytes was determined by the immunofluorescence method "Status" using a set of monoclonal and polyclonal antibodies, the quantitative content of total immunoglobulins A, M, and G in blood serum by enzyme immunoassay, circulating immune complexes - by the method of precipitation of polyethylene glycol according to Yu. A. Grinevich and A.I. Alferov (1981), phagocytic number (PF) and phagocytic activity of neutrophilic leukocytes (PHA) - according to H.A. Park, 1972. Serum content of pro-inflammatory cytokines (interleukin TNF- α , IL-6) and anti-inflammatory (IL-10) was determined by enzyme immunoassay using commercial kits "Vector - Best, Russia". To compare the obtained immunological results, 20 healthy people aged 20 to 35 years were examined.

The average age of persons in the control group was 28.4 \pm 0.9 years.

There were no significant differences between the groups of sick and healthy individuals in terms of age and gender (P>0.5).

Result and Discussion

Conducted PCR studies revealed the following STIs in patients (Table 1).

From the data in Table 1, it can be seen that the etiological cause of OK in patients was various types of HPV. Human papillomavirus of low oncogenic risk(types 6 and 11) was identified as the most common cause of UC - it was found in 93.6% of etio-

Table 1. Frequency of sexually transmitted infections in patients

Type of infection	Patients (n = 47)	
	Abs	%
HPV 6,11	44	93,6
HPV 31,33,35	7	12,8
HPV 16,18	3	6,4

Ureaplasmosis	11	23,4
Mycoplasmosis	6	12,8
Chlamydia	11	23,4
HSV 1,2	5	10,6
Gardnerellosis	4	8,5

logy disease was high-risk HPV (types 31, 33, 35), however, in 3 (6.4%) patients with OC, high-risk HPV (types 16 and 18) was caused. HPV as a mono-infection proceeded only in 16 (34%) patients, and in 31 (66%) - mixed infection of OK with other

STIs was observed. In 15 (31.9%) cases, PVI was combined with urogenital urea plasmaosis (UGU) and mycoplasmosis (UGM), in 11 (23.4%) cases - with urogenital chlamydia (UHC), in 5 (10.6%) - with the virus herpes simplex (HSV) types 1 and 2, in 4 (8.5%) - with gardnerellosis. Mixed HPV infection with one STI was detected in 8 (17%) patients, with two genital infections - in 13 (27.7%), with three - in 10 (21.3%).

Immunological studies in patients revealed violations, which are shown in Table 2.

Table 2. The state of immunological parameters in patients with OK

Indicators	Control group (n = 20)	Patients (n = 47)	P
Lymphocytes, $10^9 / \mu$	2,22 ± 0,14	2,02 ± 0,13	> 0,1
Lymphocytes, %	32,6 ± 1,9	31,8 ± 1,7	> 0,1
CD3 (T- lymphocytes), %	70,8 ± 3,1	62,4 ± 2,6	<0,05
CD4 (T- helpers), %	43,9 ± 2,0	33,8 ± 1,7	<0,01
CD8 (T-cytotoxic), %	25,3 ± 1,6	22,5 ± 1,3	> 0,1
CD4 / CD8	1,74 ± 0,12	1,50 ± 0,10	> 0,1
CD19 (B- lymph.), %	14,3 ± 1,1	17,2 ± 1,5	> 0,1
IgA, g/l	2,21 ± 0,14	2,55±0,13	> 0,1
IgM, g/l	1,98 ± 0,14	2,46 ± 0,13	<0,02
IgG, g/l	14,5 ± 1,1	19,6 ± 1,3	<0,01
CIC, g/l	2,49 ± 0,18	3,22 ± 0,19	<0,02
PANL, %	72,7 ± 5,2	55,7 ± 4,3	<0,02
FN	6,6 ± 0,5	5,6 ± 0,4	> 0,1
TNF - α , pg/ml	7,36 + 0,59	10,64 ± 0,65	<0,001
IL -6, pg/ml	2,58 + 0,19	3,23± 0,22	<0,01
IL -10, pg/ml	7,68 + 0,48	5,74 ± 0,39	<0,01

p – the statistical significance of the difference to the data of the control group

The data in Table. 2 show that in patients with OK, compared with healthy donors, significant immunological disorders were detected, manifested by a change in 9 out of 13 studied immunity parameters. Suppression of cellular immunity was expressed in a significant decrease in the peripheral blood of patients with the number of T-total (CD3-, $p < 0$).

An increase in the activity of the humoral part of immunity was indicated by an increase in the

content of serum IgM by 24% ($p < 0$). The results of Table 2 indicate that the inflammatory process in patients with OK is accompanied by a high th, compared with the normative data, the activity of pro-inflammatory TNF- α ($p < 0$).

It should be noted that immunological disorders in patients with a disease duration of more than six months, atypical (papular, flat, hyperkeratotic) forms of OK, with mixed infection with 1 and, especially, with 2-3 STIs, were more pronounced.

Conclusion

Thus, studies have shown that among men in the Republic of Tajikistan, the most common STIs of viral origin (AB - OK) have a certain distribution, they occur, in most cases, in the form of mixed infection with other, more often bacterial STIs. In the pathogenesis of AD, immunity disorders are important and must be taken into account in the treatment of patients.

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