

THE ROLE OF HPV AND UROGENITAL INFECTIONS IN MAN INFERTILITY

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Introduction: Every year in the world are detected million sexually transmitted diseases. They cause genital infections with moderate or serious illness, infertility and in some cases death. C. trachomatis, Ureaplasmas, Mycoplasmas and HPV are the main microorganisms involved. For a long time, the research has focused only on women, but also men can be responsible for a continuous transmission of the infection among sexually active couples. Genital Ureaplasmas and Mycoplasmas are part of male urethra microbioma and they could contaminate semen during ejaculation. HPV is found in males with high prevalence, not only at the level of glans, urethra and penile body but also at the level of the testicles, of the epididymis and in the seminal fluid. During last years, it has been shown the correlation between Ureaplasmas and Mycoplasmas presence and semen alteration. Instead HPV has the ability to bind to the equatorial region of the sperm head and enter it, causing alterations in nuclear level and seminal parameters such as motility and nemaspermic morphology (1, 2, 3, 4). Semen from 71 infertile men were analysed in order to investigate the presence of Ureaplasmas, Mycoplasmas and HPV DNA and if the presence of these pathogens in semen was associated with impaired sperm parameters such sperm concentration, motility and morphology. Finally has been evaluated if high-risk (HR) genotypes HPV infections were associated with impaired sperm progressive motility.

Results:. The frequency of Ureaplasma urealyticum, (UU) Ureaplasma parvum (UP) and Mycoplasma hominis (MH) in seminal fluid samples investigated was respectively 7% (5/71), 4% (3/71) and 10% (7/71).

5 patients presented coinfection of Mycoplasmas and Ureaplasmas. 3/71 (4%) patients resulted positive for HPV infection and the following genotypes were found in positive patients: HPV 16, 31 and 59. In none of 3 patients was detected the simultaneous infection of Mycoplasmas or Ureaplasmas and HPV.

The semen sample of patient 11 (HPV 31+) showed alterations concerning concentration, progressive and total motility and nemaspermic morphology, the patient 12 (HPV 59+) had only one alteration about the nemaspermic morphology with a percentage of normal forms equal to 3%. In the patient 13 (HPV 16+), the seminal parameters were aligned with normal semen parameters (Table1).

The patients with Ureaplasmas and Mycoplasmas infection showed alteration concerning motility and presented only 3% normal form. Patient 7, with Ureaplasma urealyticum and Mycoplasma hominis coinfection, presented severe semen alteration: 6% total motility and 2% of normal nemaspermic morphology as reported in the Table 1.

Figure 1 and figure 2 shows morphologic altered nemaspermic forms.

Conclusions: The study showed that urogenital and HPV infections compromise male reproductive health, influencing negatively sperm motility and morphology. HPV has the ability to bind to the spermatozoon and enter inside it, altering the state of nuclear integrity. Ureaplasmas and Mycoplasmas alter motility, often causing vacuolization of the spermatozoa heads. Molecular investigation of seminal fluid could therefore be useful to identify the presence of these microorganisms. This could be useful in the case in which a couple has decided to undertake a PMA, in order to early detect the presence of HPV and urogenital pathogens, thus improving the fertility rate, reducing the abortion rate and improving the outcomes of PMA.

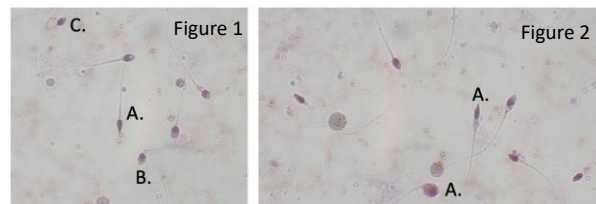


Figure 1 and Figure 2: Morphologic nemaspermic abnormalities

- A. Abnormal heads (thin narrow head and macrocephaly)
- B. Angulated neck (bent neck)
- C. Defective tails (coiled tail)

Patient	Microorganisms	Volume (mL)	Concentration	Motility	Progressive motility	Typical Morphology
1	MH+UU	4	9 x 10 ⁶	49%	15%	3%
2	UU	4	18 x 10 ⁶	45%	15%	3%
3	MH	3.5	45 x 10 ⁶	56%	26%	3%
4	MH	5.5	43 x 10 ⁶	54%	20%	4%
5	UP	5.5	3.5 x 10 ⁶	35%	15%	3%
6	UP	2	25 x 10 ⁶	43%	28%	3%
7	MH+UU	5	34 x 10 ⁶	36%	6%	2%
8	MH+UP	2.5	27 x 10 ⁶	40%	20%	3%
9	MH+UU	1.5	21 x 10 ⁶	44%	11%	3%
10	MH+UU	3.5	32 x 10 ⁶	55%	25%	5%
11	HPV31+	3.5	12 x 10 ⁶	30%	10%	3%
12	HPV59+	3.5	24 x 10 ⁶	53%	30%	3%
13	HPV16+	3	92 x 10 ⁶	64%	34%	7%
Normal semen parameters		>1.4	16x10 ⁶	42%	30%	4%

Table 1: infections and patients seminal parameters

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