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HPV genotype determination and E6/E7 mRNA detection for management of HPV positive women

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Abstract

Background: Clinical management of HPV positive women is difficult since many of the infections, including high-risk oncogene genotypes (hr-HPV), are transient. Therefore only a limited number of patients have a high-grade lesion and sending all HPV positive women for colposcopy would only increase costs and unnecessary treatment, with serious psychological consequences for patients. The need has emerged to identify other HPV related markers able to correctly detect women with a high-risk of developing high-grade lesions. Genotyping and the search for E6/E7 mRNA are among the possible candidates.

Methods: The study was carried out by means of an observational analysis of the data relative to 674 HR-HPV positive women who we had observed from January 2013 to June 2015; the data had been gathered in a database at the HPV Center of the University Hospital of Catania, Italy.

Women were considered eligible for this study if the following data was present in the database: Pap TEST, histologic evaluation, HPV TEST and E6/E7 mRNA detection.

We calculated the Odds Ratio (OR) of woman who were mRNA positive, with CIN2+ lesions, and Odds Ratio of HPV16 positive women.

Results: Transcripts were detected in 23.6% (69/292) of the women with CIN1 and in 97.2% (210/220) of those with CIN2+.

Regarding genotyping, the 81.8% (180/220) of the women with CIN2+ had genotype 16, while only 18.1% (40/220) had genotype 18, 31, 33, 45.

We calculated the OR in the group of HPV16 women with CIN2+ (OR = 4.62; 95% CI = 3.13 to 6.82), this value increased (OR = 106.12; 95% CI = 53.71 to 209.69) in women with CIN2+ and positive mRNA.

Discussion: The presence of the HPV16 genotype in our study was associated with a risk 5 times greater of developing a high-grade lesion (CIN2+) (OR = 4.62 95% CI:3.13–6.82); this supports the hypothesis that it would be opportune to have targeted protocols for the management of HPV 16 positive women. The results showed that there was an association between E6/E7 mRNA expression and histology (OR = 106.12; 95% CI = 53.71 to 209.69). The E6/E7 mRNA test showed a higher prevalence of E6 and E7 transcripts in patients with higher-grade lesions.

Conclusion: The results of this study suggest that the HPV genotype determination and E6/E7 mRNA detection would find an important application for management of HPV positive women.

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