Role of HPV DNA Testing and its influence on clinical outcomes in Cervical Cancer

DR.PARIKSHITH JAYAPRAKASH , DR. GEETA.S.NARAYANAN
Department of Radiation Oncology , Vydehi Institute of Medical Sciences and Research Centre , Bangalore , India

INTRODUCTION

Cervical cancer is the second most common cancer in women worldwide and persistent infection with human papillomavirus (HPV) is a major etiological factor

Although the standard treatment of locally advanced cervical cancer includes Definitive Chemo Radiation, little is known about the impact of HPV on the response to chemo radiation and on the clinical outcome

AIMS AND OBJECTIVES

The present study was designed to analyze the relationship between high risk HPV genotype and response to treatment in cervical cancer patients treated with definitive chemo-radiotherapy

Primary objective was to compare treatment response of cervical carcinoma patients infected with HPV 16 and HPV 18 who are treated with definitive chemo radiation

Secondary objectives was to find out the HPV positivity rate in diagnosed cervical cancer cases, to estimate the number of HPV high risk genotypes and to compare response between positive and negative cases of HPV in the same study group

MATERIALS AND METHODS

96 patients who presented to our institute were included for the study. Inclusion criteria were patients with biopsy proven carcinoma of the uterine cervix considered suitable for curative treatment with definitive radio-chemotherapy with Performance Status 0-2 (ECOG) and FIGO Stages IB2 to IIIB

HPV testing was done using TRUPCR® HPV 16&18 Real-Time PCR kit

All the patients received External Beam Radiation therapy (EBRT) on Linear Accelerator with 3 Dimensional Conformal Radiotherapy (3DCRT) to a dose of 4600cGy in 23 fractions, 5 fractions per week and weekly Chemotherapy regimen consisted of Cisplatin 40 mg/m2 during EBRT

Three fractions of High-dose rate Intracavitary Brachytherapy was delivered after completion of EBRT with a fraction dose of 7 Gy at point A

Treatment response assessment was done using RECIST criteria. Clinical examination was performed at completion of EBRT and at 3rd month follow up. Radiological response was assessed using MRI at 3rd month follow up

RESULTS

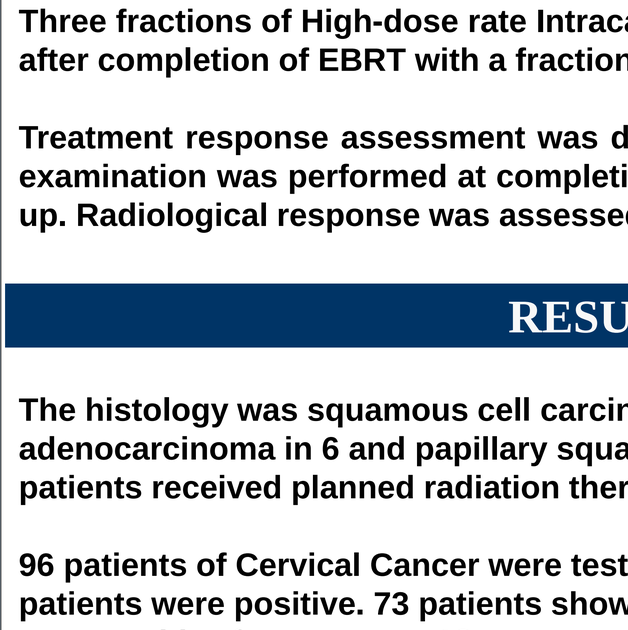
The histology was squamous cell carcinoma in 89 cases (92.7%), adenocarcinoma in 6 and papillary squamo-transitional in one case. All the patients received planned radiation therapy

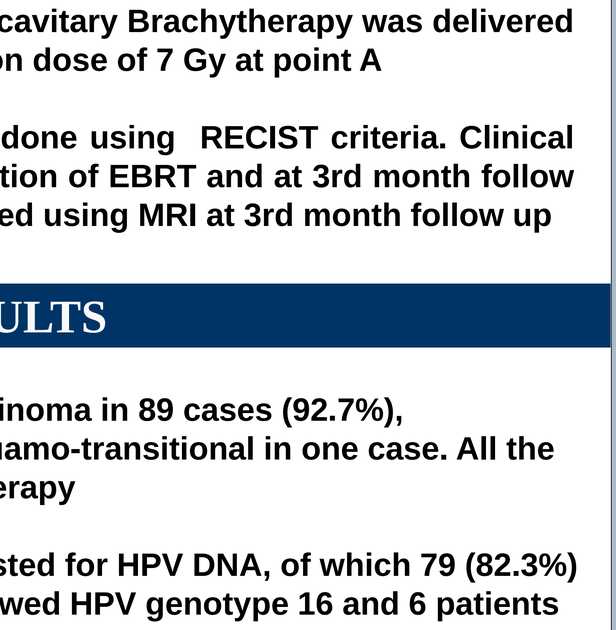
96 patients of Cervical Cancer were tested for HPV DNA, of which 79 (82.3%) patients were positive. 73 patients showed HPV genotype 16 and 6 patients were positive for genotype 18.

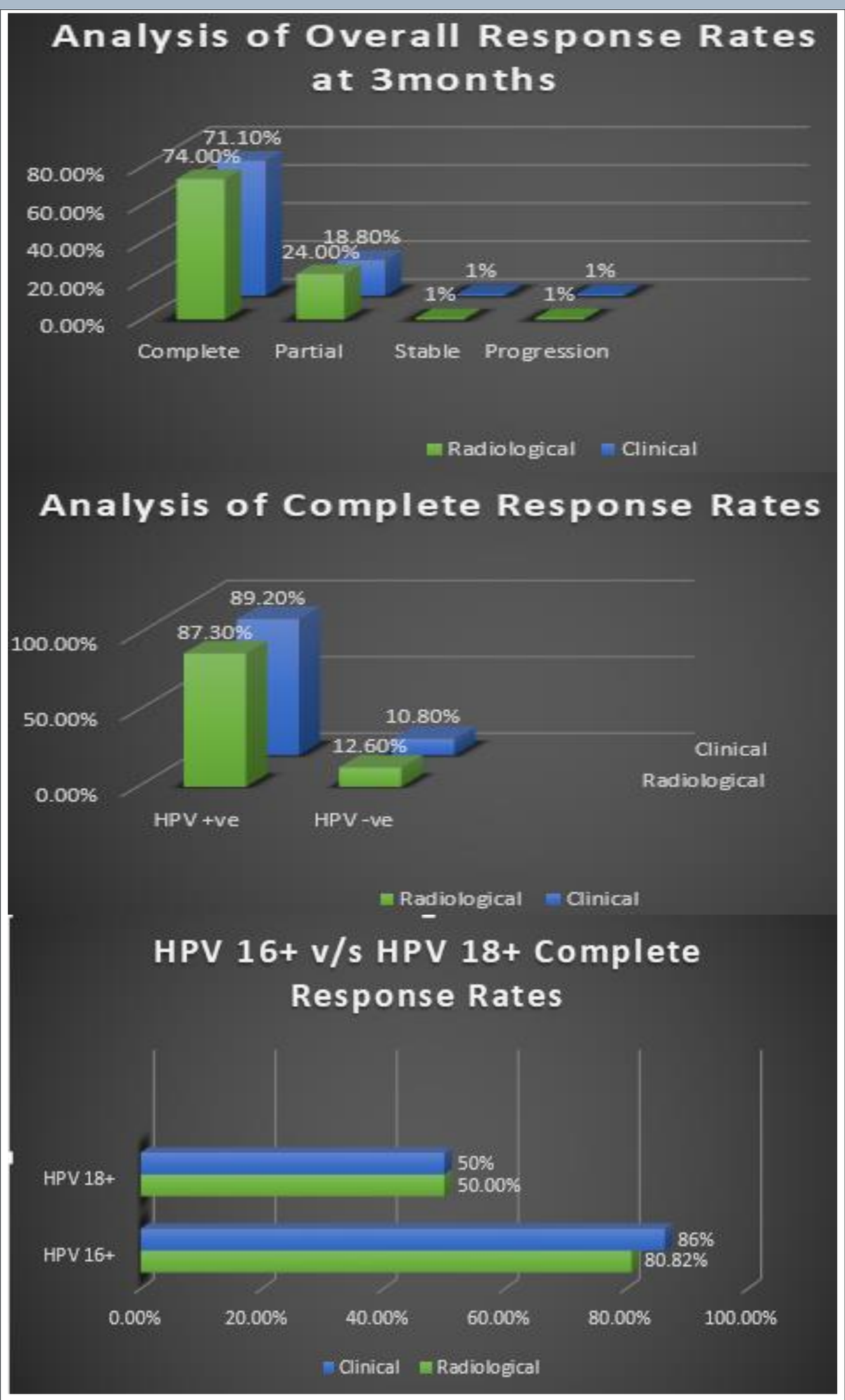
The response was correlated with HPV genotype. There was a significant increase in radiological complete response in HPV16 compared to HPV 18 and HPV negative groups at 3 months,80.8%, 50% and 52.9% respectively ($\chi 2=36.5$, $p<0.001$)

There was also a significant increase in clinical response at 3 months in HPV 16 group compared to HPV 18 and HPV negative groups,87.5%, 50% and 50% respectively ($\chi 2=29.9$, $p<0.001$)

The age of the patient, volume of the disease, overall treatment time, and average Hemoglobin level and number of blood transfusions did not have any correlation







CONCLUSIONS

HPV genotype 16 positive shows higher complete response in cervical carcinoma patients treated with definitive chemo radiation compared to HPV 18 genotype.

Further HPV genotyping could potentially help to stratify cervical cancer patients for more effective therapeutic regimens.

Patients with HPV16caused cervical cancer may receive less aggressive therapy to reduce side effects, while those with HPV18 positivity may require more aggressive treatment and closer monitoring

Given the much lower prevalence of HPV18 in cervical cancer in this than HPV16 in this study , independent studies with large sample size are needed to assess the impact of HPV18 on patients' prognosis

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