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Study on association of poor metabolizer for cytochrome P450 2C9 in head and neck cancer and treatment response (chemoradiotherapy)

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Aims: The aim of the present study is to investigate the association of polymorphism in cytochrome P450 2C9 (CYP2C9) with head and neck squamous cell carcinoma (HNSCC) and response in patients receiving chemoradiotherapy.

Material & Methods: one hundred fifty males suffering from locally advanced head and neck squamous cell carcinoma and an equal number of healthy controls were genotyped for CYP2C9*2 & CYP2C9*3, leading to poor metabolizer (PMs) by PCR based RFLP. Each cases were assessed thoroughly for treatment response following WHO criteria.

Results: The frequency of heterozygous genotypes of both CYP2C9*2 (27.3%) & CYP2C9*3 (20.1%) were found to be significantly higher in the HNSCC cases as compared to the healthy controls. Tobacco intake in the form of chewing or smoking and alcohol intake resulted in several fold increase in the risk to HNSCC in the cases carrying variant genotypes of CYP2C9*2 or CYP2C9*3. Further, majority of the cases assessed for response(134) carrying variant alleles of both CYP2C9*2 (65.3%) or CYP2C9*3 (70.58%) were found to respond poorly to the radio-chemotherapy.

Conclusions: The data suggests a significant association of the CYP2C9 polymorphism with HNSCC and treatment outcome underlining the importance of pre-therapeutic genotyping in determining the treatment schedule.

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