

Neurology and Neuroscience

June 11-13, 2018 | London, UK

Assessment of autonomic function during Ictal and Interictal Period of Migraine

Abhinav Singh Verma

All India Institute of Medical Sciences, India

Background: Studies suggest a degree of autonomic dysfunction which gets implicated in pathophysiology of migraine, but none has ever commented on differences among ictal and interictal (headache free) period of migraine. Therefore, this study aims at assessing and comparing autonomic dysfunction during ictal and interictal period of migraine.

Methodology: Patients with migraine according to ICHD 3rd edition β version criteria were recruited for the study. Tests of sympathetic function (beat to beat blood pressure changes in Head-Up-Tilt test) and parasympathetic function (heart rate responses to Deep Breathing and Valsalva Manoeuvre) were performed, each during ictal and interictal period. The results of the ictal period were then compared with that of interictal period.

Results: Ten patients [Eight female (80%), 20-58 years, mean 34.6] were studied. Nine patients (90%) showed Expiration: Inspiration [E:I] ratio {Ratio of maximum RR interval during expiration phase with minimum RR interval during inspiration phase} in Deep Breathing test below 1.24 ($p=0.008$) and four patients (40%) showed 30:15 ratio {Ratio of RR interval during 30th heart beat with that during

15th heart beat} in Head-Up-Tilt test below 1.04 ($p=0.045$), thus indicating significantly impaired vagal response. These results were in ictal period. All patients exhibited normal parasympathetic response during interictal period and intact sympathetic function during both ictal and interictal periods.

Conclusion: There is significant parasympathetic dysfunction in ictal state as compared to headache-free periods. Parasympathetic dysfunction is observed in E:I ratio ($p=0.008$), Δ HR ($p=0.014$), 30:15 ratio ($p=0.045$). There is no objective evidence of sympathetic dysfunction in ictal period as compared to headache-free periods. Therefore, this study provides newer insight into the pathophysiology of a migraine attack- the genesis of the ictal state, which is attributed to parasympathetic dysfunction.

Speaker Biography

Abhinav Singh Verma has completed his MBBS from the premier institute, All India Institute of Medical Sciences (AIIMS), New Delhi. He is an ICMR award winning researcher and active researcher in the department of Neurology at AIIMS, New Delhi.

e: abhinavsinghverma@gmail.com

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