Experiments were designed with the aim to understand the nature of attentional and volitional deficits with the help of psychophysiological measures such as Auditory Evoked Potentials (AEPs), and event related slow potentials like Contingent Negative Variation (CNV) and Bereitschafts Potential (BP). The study also aimed at understanding the role of frontal, temporal and parietal lobes in the neurogenesis of these potentials. The total sample of the patient group comprised of 52 patients with space occupying lesions (SOL). The nature, extent and type of lesion was determined by neuro-radiological and histopathological findings. All the patients were within the age range of 20 to 50 years and were right handed. 30 neurologically normal subjects matched for age, constituted the normal control group. The patient group was further divided into sub-groups on the basis of the caudality of lesion. The patient group was also administered neuropsychological tests related to attention. AEPs were recorded with T4-Cz-T3 leads. The experiment involved the random presentation of tones of varying frequencies. BP paradigm required the subject to press two microswitches at will any time during the arrival of the bright beam between the two vertical cursors on the screen of an oscilloscope. A negative delay of 4 secs was used for reverse averaging, CNV was recorded with the
conventional paradigm involving the presentation of S1 and S2 with an ISI of 3 secs. BP and CNV were recorded from Cz and Fz electrode sites. The results showed that cortical lesions adversely affect the latencies of AEP components. The posterior structures have a greater association with P1 and P2, whereas N1 has widely distributed neurogenerators in the cortex. In contrast, amplitudes remained unaffected. The AEP components like P1, N1 and P2 might be having independent generator sources. The onset latency of BP was found to be markedly impaired in the patients with SOL. The amplitudes were relatively less affected. It has been discussed that the onset latency of BP might be mediated by both anterior and posterior cortical structures and there might be different generator sources of amplitudes and latencies. The findings related to CNV reveal that it is adversely affected by cortical lesions. Frontal lobe has a major role in the production of early and late components of CNV. A sizeable number of patients failed to produce these potentials. The attentional and volitional processes appeared to be mediated by various cortical structures, and the frontal lobe seems to have a vital role.