

Call centre workers: An emerging class of people with epilepsy?

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Background and Objective: The business process outsourcing industry in India employs more than 350,000 workers. Call centres, run by these companies, operate round the clock. This creates work schedules that involve working overnight resulting in sleep disturbance. Sleep deprivation is well known to lead to seizures.¹ Nonepileptic latently photosensitive individuals may experience a first photosensitive seizure by exposure to strong photic stimulation. Electronic screen is inherently a flickering medium because computer picture is made up of a series of frames that occur at a rate of 25/s or 30/s.² Hence computer is a common precipitant of photosensitive seizures. Sleep deprivation further reduces the seizure threshold of predisposed individuals exposed to computer screens. The purpose of the present study is to report high occurrence of idiopathic first seizure in call centre workers and to identify factors that trigger their seizures.

Methods: Seventy four call centre workers who presented with history of seizure for the first time in their life were studied. Contrast enhanced MRI brain was normal in 52 patients. Clinicoinvestigatory profile of these 52 patients was studied in detail. Electroencephalogram (EEG) was performed in all the patients. All patients were followed for an average period of 6 months to 2 years.

Results: The age of the 52 patients ranged from 18 years to 30 years. There were 32 males and 20 females. All were working on night shift when they suffered from seizure. All had joined the current job within last six months of their seizure episodes. All the patients had generalized tonic-clonic seizures. There was no history suggestive of seizure or myoclonic jerks in the past in any patient. EEG showed slowing in theta range in 30 patients, generalized spike discharges in 12 patients and photoconvulsive response in 5 patients. Since visual stimulus and sleep deprivation were two major factors responsible for seizure causation in these patients, all were advised to either quit their job or at least switch over to day shifts or avoid unpredictable schedules. Ten patients quit the job and none had seizure recurrence during the follow up period, while only one out of 8 who switched to day shift had seizure recurrence.

Of the remaining 34 patients, 18 had seizure recurrence during the follow up period. Monocular occlusion reduced epileptogenic effects of flicker in most patients and was found to be a good preventive measure. The vast majority of visually induced seizures were reported to occur when patients were close to the screen. Viewing computer screen from a distance of 3 times the width of the screen effectively reduced seizure occurrence. They were also advised to reduce brightness of screen, wear colored glasses, use antiglare screen and avoid sleep deprivation. Those with recurrence were also put on sodium valproate. None had further recurrence.

Conclusion: There was high occurrence of idiopathic first seizure among call centre workers. Sleep deprivation and visual stimulus were the likely risk factors. Most patients responded to simple advices with good prognosis.

References

1. Mendez M, Radtke RA. Interactions between sleep and epilepsy. *Semin Pediatr Neurol* 2001; 8: 241-50.
2. Wilkins AJ, Bonanni P, Porciatti V, Guerrini R. Physiology of human photosensitivity. *Epilepsia* 2004; 45: 7-13.