Effects of rotating night shift on circadian pattern of salivary cortisol and 6-sulfatoxy melatonin levels

Anjum B.1, Verma N. S.2, Tiwari S.3, Singh R.1, Mahdi A. A.1 and Singh R. K.4

1Departments of Biochemistry, C S M Medical University Formerly King George’s Medical University, India
2Departments of Physiology, C S M Medical University Formerly King George’s Medical University, India
3Departments of Surgery, C S M Medical University Formerly King George’s Medical University, India
4Department of Biochemistry, SGRRIM&HS, India

Objectives: The present study investigate the circadian pattern of salivary cortisol & melatonin sulphate level in night shift workers & to find out whether these changes in the circadian pattern produce by night shift are reversible in due course of time.

Method: 62 Healthy nursing professional of both sex who perform day and night shifts. Saliva and urine samples were collected at approx. 8 hours interval in their night shift and day shift schedule. Cortisol and melatonin sulphate were estimated by the ELISA method. Groups were compared by applying paired t test.

Results: Evening cortisol level did not show a significant pattern between night (3.22 ± 2.09) vs. day shift (2.97 ± 1.76). Extremely significant difference was found in night cortisol levels among night (4.34 ± 3.37) vs. day shift (2.70 ± 2.32), (p<0.001) due to recovery during day shift. Alteration in mean morning cortisol level was also found between night (3.73 ± 2.47) vs. day shift (5.00 ± 2.73). However, this pattern was not highly significant. Night melatonin level was found declined as compared to morning level and this pattern was significant when compared night melatonin between night (16.71 ± 11.98) vs. day shift (22.71 ± 13.25) and morning melatonin level between night (20.07 ± 14.13) vs. day shifts (28.26 ± 14.14) (p<0.001). Altered melatonin levels were found in night and in the morning samples during night shift.

Conclusion: Alterations in circadian pattern of salivary cortisol and melatonin sulfate were found during night shift due to sleep deprivations and internal desynchronization. Sleep loss might be associated with decreased melatonin level leads to endocrinal and cardiovascular diseases.

anjumb85@gmail.com