Effects of Prolonged Night Shifts on Salivary α-Amylase, Secretory Immunoglobulin, Cortisol, and Chromogranin A Levels in Nurses

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長時間夜間勤務が看護師の身体に及ぼす影響

(Influence of long-term night-shift work on nurses)

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Abstract

This study investigated the stress of long-term night-shift work on nurses, along with α-Amylase, secretory immunoglobulin A (s-IgA), Cortisol and Chromogranin A (CgA) in 25 nurses. A work shift of nurses divided into two periods of time, 8 hours day-shift and 16 hours night-shift. This study determined 16 hours night-shift 13 nurses as target group and 8 hours day-shift 12 nurses as control group. Working form of this study was determined 4 continuous days and had a holiday before and after working days. Saliva samples were collected using a Salimetrics Oral Swab (Salimetrics, USA). For day-shift group, saliva samples were collected before and immediately after work on working days. For night-shift group, saliva samples were collected before and after work, and also before and after a rest break. On holiday saliva samples were collected at the time of waking up and going to bed in both groups. α-Amylase, s-IgA, Cortisol and CgA were measured by using each assay kits.

α-Amylase activity in the night-shift nurses were showed higher activity than day-shift nurses. S-IgA in the day-shift nurses were showed a movementof the circadian rhythm. On the working day, day-shift nurses were showed a fewer movement than holiday. Night-shift nurses were showed a different movement between first working day and secondworking day. Cortisol showed a movement of the circadian rhythm in the night-shift nurses and the day-shift nurses on holiday. Day-shift nurses were showed a movement of the circadian rhythm on the working day. Night-shift nurses were showed a high level before work and decreased before rest break. But after rest break Cortisol level were increased and decreased immediately after work (in the morning). Cortisol is known that it shows circadian rhythm such as high level in the morning and decreasing for night. Night-shift nurses showed the movement such as that working start in the evening was in the morning. CgA in the night-shift nurses were showed a higher level than day-shift nurses.

These findings suggest that 16 hours night-shift work causes the derangement of the circadian rhythm.