ORIGINAL RESEARCH PAPER

Medical Science

EFFECT OF HOT FOOT BATH ON QUALITY OF SLEEP AMONG THE OBESE INSOMNIA PATIENTS - A SHORT RESEARCH REPORT

KEY WORDS: Sleep Quality; Warm Water Immersion; Obesity.

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ABSTRACT

BACKGROUND: This study examined the water therapy in the form of hot foot bath (HFB) for improving sleep quality among the obese patients with insomnia. **METHODOLOGY:** We have recruited 8 obese patients with known history of insomnia. The patients were instructed to drink a glass of tepid water and sit in the foot bath by immersing legs in a HFB tub up to mid of the calf muscles for 20 min before bedtime. The Alice PDX is a portable monitor used for the assessment of quality of sleep in a normal day and HFB intervention day. **RESULTS:** After the HFB, Total sleep time (TST [90 min]) increased, with reduction in the sleep latency time (SL [20 min]). There was a significant improvement in the N3 stage sleep time (10 min) with moderate reduction in the wake after sleep onset time (WASO [18min]) among obese patients. **CONCLUSION:** The findings above showed that single session of HFB intervention improves sleep quality among the obese participants.

RESEARCH LETTER-

Insomnia is a public health concern in recent times and is one of the most common complaints reported. Insomnia is also associated with an increased risk of depression, anxiety, substance abuse, suicide, motor vehicle accidents and possible immune dysfunction with chronic insomnia [1]. Low-dose sedative antidepressants are now widely used in clinical practice for the treatment of insomnia. A major issue in the treatment with sedative antidepressants is the question of undesirable side effects, especially in patients with chronic illness and also in elderly [2].

Currently, water therapy in the form of hot foot bath (HFB) and behavioral therapies are used worldwide in the treatment of insomnia symptoms, which are mainly used as alternative or complementary practice 3. HFB, a simple hydrotherapy treatment one among the promising non pharmacological intervention to induce sleep has been advised for the insomnia. We have included 8 obese (5 male and 3 female; BMI>30) patients with insomnia for the present study to find the effect of a single session of HFB on quality of sleep.

The patients were instructed to drink a glass of tepid water and sit in the foot bath by immersing legs in a HFB tub up to mid of the calf muscles for 20 min before bedtime. The temperature of the bath was maintained between 40 ± 2 °C with the help of constant temperature maintenance sensor with the on/off point of the heating coil which has been preset to get ± 1 °C accuracy [3].

It also has a submersible water pump which makes the water circulate from the heating chamber to the foot bath tub, so that there is uniform heat distribution throughout the experimental protocol. Simultaneously, a wet compress is placed over the head of the patients [4].

The Alice PDX is a portable monitor used for the assessment of quality of sleep. Sleep indicators including total sleep time (TST, the sum of sleep stages N1–N3 and REM), sleep latency time (SL, lights off to the first epoch of stage N1 sleep) and percentages of sleep (stage N1, stage N2, stage N3, and REM sleep) and wake after sleep onset (WASO) were calculated for the patients in a normal day and HFB intervention day. After the HFB, TST (90 min) increased, with reduction in the SL time (20 min). There was a significant improvement in the N3 stage sleep time (10 min) with moderate reduction in the WASO time (18min) among obese patients. The findings above showed that single session of HFB intervention improves sleep quality among the obese participants. It may be through peripheral vasodilatation which helps in transfer of heat from the core to the periphery known as distal proximal gradient, which is reported to induce better sleep onset and depth [5]. Another mechanism could be through sensitization of warm sensitive neurons which modulates their firing rate in the pre-optic area and anterior hypothalamus which also aids in better sleep [6]. With limited sample size and being a nonrandomized study without control group, future studies with larger sample size and a randomized controlled study design needs to be conducted to validate the underlying mechanism. The results of this study could be used to develop future large scale studies in this important research area.

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