Postoperative Sleep Status after Total Knee Arthroplasty

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INTRODUCTION: Postoperative pain could lead to sleep disruption, which leads to intensified pain and even poor recovery. In early stage after orthopaedic surgery, patients tend to suffer from postoperative pain, leading to sleep problems. Postoperative sleep status is important for recovery. The purpose of this study is to evaluate postoperative sleep disturbance in patients undergoing total knee arthroplasty.

METHODS: This study was approved by IRB authority and informed consent was obtained from the patients before their participation. One-hundred-sixteen patients were included in this study. Postoperative pain was evaluated by visual analogue scale (VAS) pain scores. Sleep quality and sleep satisfaction were evaluated. Sleep quality on days 1, 2, and 7 was monitored by a mattress-type actigraphy without any direct sensor including bioelectrodes on the human body. Sleep quality measures included hours of nocturnal awakening, frequency of body motion, and sleep efficacy. Sleep efficacy was defined as the rate of actual sleeping time over total bedtime hours. Sleep satisfaction was evaluated by VAS sleep satisfaction scores.

RESULTS: Postoperative VAS pain scores was highest at day 1, then decreasing by day 7. For sleep quality, nocturnal awakening hours was fewer at day 1 after surgery. Then it was increased by day 7. Frequency of body motion was less at day 1, and increased by day 7. Sleep efficacy was inferior at day 1 and recovered by day 7. Deep sleep time was short at day 1, and then increased by day 7. VAS sleep score was lowest at day 1, then increased by day 7 after surgery.

DISCUSSION AND CONCLUSION:

This study found that postoperative pain score was high at day 1 after surgery. Sleep status was worse in early postoperative period. Postoperative pain exhibited fewer nocturnal awakening hours, less frequent body motions, and superior sleep efficacy. Pain leads to sleep disruption, in turn, poor sleep quality aggravates pain sensations. This results in a vicious circle of pain and poor sleep quality, leading to intensified pain and even poorer sleep quality. Postoperative pain contributes to sleep disturbance that causes the inability to participate in postoperative rehabilitation, leading to delayed recovery and hospital discharge. The interaction between postoperative pain and sleep quality should be considered for functional recovery.