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Title: Treatment of postural obstructive sleep apnoea by a new vibrating postural device. A preliminary study

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Body: Over 50% of obstructive sleep apnoea (OSA) patients met criteria for postural OSA. This is defined by an apnoea-hypopnea index (AHI) doubling in supine position vs. not supine. Our group in collaboration with SIBEL SA, have developed a patented postural device (PCT/ES2010707108 and P26018USPC). Is a vibrating device of 4 X 4 cm, weight of about 50 gr integrating an accelerometer, vibrator and other sensors. It is placed on the forehead and when detects that the patient is in the supine position for 30 s or more, starts a vibration, with increasing intensity, which ceases when the patient moves to lateral.Theses are results of a pilot study in patients with postural OSA. All patients were studied by standard polysomnography (PSG) three times; at baseline, and at 1 and 4 weeks of using the device. The aim was to demonstrate a significant reduction in the AHI and that this reduction was maintained over time. We also want to assess the quality and quantity of sleep using the device.We studied 12 patients (75% male), body mass index of 25.7 Kg/m2 (SD 3.3). The baseline AHI was 33.5 (SD14.7) and was reduced after 1 and 4 weeks using the device to 22.8 (SD 10.6; p = 0.004) and 19.7 (SD 7.4; p =0.002), respectively. The percentage of total sleep time (TST) in supine changed from 51.5% (SD 14.8%) at baseline to 16.4% (SD 16.0%; p = 0.002) and 25.2% (SD 21.0%; p = 0.005) at 1 and 4 weeks of using the device, respectively. The device did not significantly modify the TST and significantly reduced the arousal Index.The results suggest that this device is safe and could be useful as a treatment for postural OSA in a significant number of patients and its effect is maintained over time.