

# WORLD BRAIN CONGRESS

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## Can vagus nerve stimulation decrease the risk of bone fracture?

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**Background:** Most epilepsy treatments are associated with low bone mineral density (BMD) and increased risk of bone fracture. Recent studies have demonstrated that cholinergic activity has an anabolic effect on bone metabolism. Vagus nerve stimulation (VNS) is a promising treatment of epilepsy that, as a side effect can increase cholinergic activity. Accordingly, we hypothesize that VNS can increase BMD in epilepsy patients.

**Methods:** A series of 16 epilepsy patients (6 females and 10 males; 5 to 46 years old) scheduled for VNS insertion were assessed for BMD before and after the VNS insertion. VNS insertions were performed between May 2012 and October 2015. Paired t-test was used to compare BMD values before and after VNS.

**Results:** Initial BMD z score values were  $-1.1 \pm 0.741$  (mean  $\pm$  SD) gr/cm<sup>2</sup> for femoral neck and  $-1.027 \pm 1.129$  for L1-L4. BMD was assessed 446.5  $\pm$  151.2 days after VNS insertion. BMD values were significantly higher after VNS insertion for L1-L4 ( $p=0.033$ ) with mean BMD increasing from  $-1.027$  to  $-0.897$ . VNS had no effect on the BMD of the femoral neck ( $p=0.62$ ).

**Conclusions:** Epilepsy patients undergoing VNS might benefit from an improvement in lumbar spine BMD thereby decreasing the risk of bone fractures. Further studies are warranted to confirm this finding.

### Biography

Ahmad Tamimi Started his study at University of Oviedo graduating as Medical Doctor in 1977, he got his training in Neurosurgery at General Hospital of Asturias, Spain as from 1977-1981, he had his PhD in Medicine from University of Oviedo, Spain, in 1981. He worked as a consultant at General Hospital of Asturias as from 1981 until 1984, consultant at General Hospital of Las Palmas as from 1984 until 1990, and consultant at Jordan University Hospital since 1990 till present. He was appointed as Chairman of Neurosurgical Department as from 2000 until 2013. In 2000, he became a full professor of Neurosurgery. Prof. Tamimi became a Dean of Medical School at Muatah University during the period from 2005-2007 and General Director of Jordan University Hospital from 2013-2016. Member of the scientific committee the Arab Board in Neurosurgery and Member of the scientific committee Jordanian Board scientific committee member in Neurosurgery. Special interest in Neuro-oncology and epilepsy surgery. He is the author of over 150 publications in Neurosurgery, Medical Ethics, Medical Education and Health care system.

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