

58. (512) ASSESSMENT OF JAWBONE MICROARCHITECTURE IN BISPHOSPHONATE- TREATED SHEEP BY CONE-BEAM COMPUTED TOMOGRAPHY

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The cone-beam computed tomography (CBCT) is a non-invasive 3D reconstruction technique that enables to assess jawbone micro-architecture. It is used to illustrate results through 3D images. In the present report, the combination of CBCT with other techniques was used to evaluate changes in composition and micro-architectural structure quantity of the ewe jawbone after oestrogen withdrawal (OVX) and/or chronic treatment with high doses of zoledronic acid (zol). Three groups of adult Corriedale ewes, 35 to 40 kg body weight were used: OVX: OVX ewes receiving saline solution; ZOL: OVX ewes treated with Zol (4 mg/month) for 28 months for high cumulative dose of ZOL in bones and SHAM: SHAM ewes receiving saline solution (control). At the end of the study, hemi-mandibles were extracted: Bone mineral density (BMD) and content (BMC) of the mandibles were evaluated ex vivo by DXA (Lunar DPX); CBCT was performed using Planmeca Promax 3D Classic. Results of

CBCT: OVX as compared to SHAM ewes significantly decreased BMC and BMD ($p<0.001$); BV/ TV (%), Tb. Th, connectivity and an-isotropy ($p<0.0075$; $p<0.0075$, $p<0.001$ and $p<0.02$, respectively) while Tb. Sp ($p<0.0002$) was significantly increased. Zol treatment did not show statistical differences when compared to SHAM group. Zol showed values of anisotropy significantly higher than OVX group ($p<0.018$) and Tb.Sp significantly lower than OVX groups ($p<0.043$). BV/ TV (%), Tb. Th and connectivity as compared to OVX group showed a clear tendency to be higher and almost reached significance ($p=0.055$; $p=0.061$ and $p=0.054$, respectively). Maxillary BMC and BMD were lowest in OVX ewes ($p<0.05$) and were significantly higher in ZOL than in SHAM ewes ($p<0.05$). Conclusion: The CBCT technique was useful to evaluate the deterioration of the bone quality by estrogen withdrawal and the recovery by ZOL treatment.