Botulinum toxin in masticatory muscles of the adult rat induces bone loss at the condyle and alveolar regions of the mandible associated with a bone proliferation at a muscle enthesis

Titre	Botulinum toxin in masticatory muscles of the adult rat induces bone loss at the condyle and alveolar regions of the mandible associated with a bone proliferation at a muscle enthesis
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Résumé en anglais	In man, botulinum toxin type A (BTX) is injected in masticatory muscles for several indications such as trismus, bruxism, or masseter hypertrophy. Bone changes in the mandible following BTX injections in adult animal have therefore became a subject of interest. The aim of this study was to analyze condylar and alveolar bone changes following BTX unilateral injections in masseter and temporal muscles in adult rats. Mature male rats (n=15) were randomized into 2 groups: control (CTRL; n=6) and BTX group (n=9). Rats of the BTX group received a single injection of BTX into right masseter and temporal muscles. Rats of the CTRL group were similarly injected with saline solution. Rats were sacrificed 4weeks after injections. Masticatory muscles examination and microcomputed tomography (microCT) were performed. A significant difference of weight was found between the 2 groups at weeks 2, 3 and 4 ($p<0.05$). Atrophy of the right masseter and temporal muscles was observed in all BTX rats. MicroCT analysis showed significant bone loss in the right alveolar and condylar areas in BTX rats. Decrease in bone volume reached -20% for right alveolar bone and -35% for right condylar bone. A hypertrophic bone metaplasia at the digastric muscle enthesis was found on every right hemimandible in the BTX group and none in the CTRL group. BTX injection in masticatory muscles leads to a significant and major mandible bone loss. These alterations can represent a risk factor for fractures in human. The occurrence of a hypertrophic bone metaplasia at the Mus Digastricus enthesis may constitute an etiological factor for tori.
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Liens
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[4] http://okina.univ-angers.fr/publications/ua11478
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[6] http://www.ncbi.nlm.nih.gov/pubmed/25857689?dopt=Abstract