



Comparison between quantitative X-ray imaging, dual energy X-ray absorptiometry and microCT in the assessment of bone mineral density in disuse-induced bone loss

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Titre	Comparison between quantitative X-ray imaging, dual energy X-ray absorptiometry and microCT in the assessment of bone mineral density in disuse-induced bone loss
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Auteur	Mabileau, Guillaume [1], Mieczkowska, Aleksandra [2], Marchand-Libouban, Hélène [3], Simon, Yannick [4], Audran, Maurice [5], Chappard, Daniel [6]
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Mots-clés	BTX [7], DXA [8], MicroCT [9], qXRI [10]
Résumé en anglais	<p>OBJECTIVES: We recently introduced a new methodology called quantitative X-ray imaging (qXRI) to investigate bone mineral density in isolated rodent bones. The aims of the present study were to compare DXA and microCT with qXRI in a rat model of disuse osteoporosis.</p> <p>METHODS: Fourteen Copenhagen rats were injected with a single dose of botulinum toxin (BTX - 2 UI) in the right Mus quadriceps femoris. The left hindlimb serves as control. Areal BMD and vBMD were determined with a Hologic Discovery-W device and a Skyscan 1172 microcomputed tomograph (microCT). Absorbing material density (AMD) was determined on digitized X-ray images obtained with a Faxitron M020 device.</p> <p>RESULTS: All three methods highlighted significant lower values for aBMD, vBMD and AMD in trabecular and cortical bone in the BTX-injected side. In trabecular bone, aBMD, vBMD and AMD were significantly correlated with BV/TV. In cortical bone, only aBMD and vBMD were significantly correlated with cortical bone mass. On the other hand, only AMD was significantly correlated with the mechanical parameters bending strength and bending modulus.</p> <p>CONCLUSIONS: qXRI is a rapid and cheap method to assess trabecular bone mass in isolated rodent bones and can be used as a surrogate for the densitometry of small animals.</p>
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Liens

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- [3] <http://okina.univ-angers.fr/helene.libouban/publications>
- [4] [http://okina.univ-angers.fr/publications?f\[author\]=4866](http://okina.univ-angers.fr/publications?f[author]=4866)
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