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Quantitative Ultrasound Measurements are not Useful to Discriminate Postmenopausal Women with Colles Fracture from Controls. <u>M. Sosa</u>[1], <u>P. Saavedra</u>*[1], <u>The GIUMO Study Group</u>*[2]. [1]Bone Metabolic Unit, University of Las Palmas de Gran Canaria, Las Palmas de Gran Canaria. Canary Islands, Spain, [2]Cooperative Working Group, SEIOMM Italfarmaco, Spain.
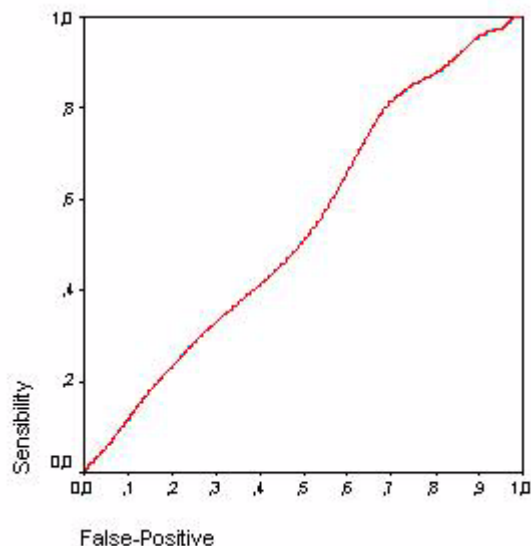
Background. There are some controversial findings when studying whether or not Colles´ fracture is associated to low values of bone mineral density (BMD). Indeed the controversial is even greater when BMD is measured by Quantitative Ultrasounds (QUS).The objective of our study was to investigate if QUS are valid to discriminate both healthy and fractured women.

Methods. Case-control study performed on 698 postmenopausal caucasian women. 213 women had suffered a Colles´fracture (CFx) in the three previous months to the study. 485 women were controls. QUS measurements were performed in the calcaneus using a Sahara, Hologic, Clinical Ultrasonometer. Tscores were calculated based upon Spanish normal values. ROC curves were also calculated.

Results.To obtain 5% of false-negative Tscore cut-off had to be establish in -2.60 and to obtain 10% of false positive Tscore cut-off had to be establish in -0.105.

Conclusion. Tscores only permit to identify 11% of high CFx risk patients and 9.2% of low risk CFx patients. These results show that QUS are not useful for risk assessment of Colles´fracture.

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Risk	Cases	Controls	Total
High	23	41	64
	12.7%	10.2%	11.0%
Undefined	149	317	466
	82.3%	78.7%	79.8%
Low	9	45	54
	5.0%	11.2%	9.2%
Total	181	403	584
	100%	100%	100%

Disclosures: **M. Sosa**, None.

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Measurement of Ultrasound Transmission Velocity (UTV) Identifies Critical Bone Quality in an Animal Model before Implantation. <u>P. H. Kann</u>[1], <u>K. A. Grötz</u>*[2], <u>R. Brahm</u>*[2], <u>B. Al-Nawas</u>*[2]. [1]Endocrinology & Diabetology, Philipps University Hospital, Marburg, Germany, [2]Oral and Maxillofacial Surgery, Johannes Gutenberg University Hospital, Mainz, Germany.

INTRODUCTION: UTV measurement may provide information about bone quality in systemic bone diseases as well as in localised diseases or conditions. Information about local bone situation obtained by UTV measurement might be useful in planning therapeutic strategies in tooth implantation in maxillofacial surgery.

AIM: The aim of this study was to investigate in an animal model in vivo whether UTV measurement might be prognostically relevant in considering the quality of the jaw bone before implantation.

MATERIALS AND METHODS: In 14 beagle dogs, following the extraction of the premolars 3 months earlier, UTV in both the upper and lower jaw was measured in intubation anaesthesia. Each site was measured 4 times using a miniaturised device (IGEA, Italy; 2 MHz). Subsequently, two self-cutting tooth implants each were inserted into this area, and the maximum torque during implantation as a surrogate for the implant stability was measured (Branemark DEC 600 motor).

RESULTS: UTV in the upper jaw (1691 ± 119 m/s) was significantly lower than UTV in the lower jaw (2161 ± 173 m/s; p < 0.001). Correspondingly, torque tended to be lower in the upper jaw (40.2 ± 9.1 Ncm) than in the lower jaw (45.3 ± 3.95 Ncm; p = 0.15). In 2/28 cases, torque was below a critical value of 30 Ncm: Both cases showed significantly lowered UTV values < 1600 m/s (p = 0.003).

CONCLUSION: The jaw bone of the beagle dog showed high mechanical quality, characterised by both high torque and UTV values. Two critical cases did not provide adequate stability of the implants (torque < 30 Ncm). Both these situations could be identified before implantation by UTV values below a critical range of 1600 m/s. Therefore, measurement of UTV of the jaw bone in vivo may be used as a non invasive diagnostic approach before implantation to identify critical bone quality with an impact for therapeutic strategy.

Disclosures: **P.H. Kann**, None.

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Use of Quantitative Ultrasound (QUS) at the Phalanges for a First Level Screening Program for Recently Menopausal Women without Clinical Risk Factors for Osteoporosis for Referral BMD Assessment by DXA. <u>C. Cormier</u>[1], <u>L. Boubli</u>*[2], <u>J. Boulanger</u>*[3], <u>E. Drapier-Faure</u>*[4], <u>P. Fardellone</u>*[5], <u>N. Genin</u>*[6], <u>F. Lavieille</u>*[7], <u>P. Lopes</u>*[8], <u>C. Nahmanovici</u>*[9], <u>D. Elia</u>*[10]. [1]Rheumatology a, Cochin Hospital APHP, Paris, France, [2]Hopital Nord, Marseille, France, [3]Centre de Gynécologie-Obstétrique, CHU, Amiens, France, [4]Hopital E. Herriot, Lyon, France, [5]Rheumatology, Teaching Hospital, Amiens, France, [6]Gynécologue, Monaco, France, [7]Gynécologue, Bordeaux, France, [8]CHU, Nantes, France, [9]Gynécologue-obstétricien, Nice, France, [10]Centres de menopause MG et FMP, Paris, France.

According to French guidelines, for women who don't present any clinical risk factor for osteoporosis at menopause, Dual-energy X-ray Absorptiometry (DXA) is not routinely recommended in their postmenopausal life. This multicenter study conducted in France on young postmenopausal women aims to identify women by phalangeal QUS who, even if they do not present any clinical risk factors for osteoporosis at menopause, are nevertheless osteoporotic after 5 to 10 years. The study data collected in 7 cities of France involve 435 postmenopausal women in the age range 55-65 yrs, postmenopause for 5 to 10 years and furthermore a group of 373 women (age range 45-55 yrs) were also evaluated by phalangeal QUS as a menopause reference. The QUS measurements were collected with the DBM Sonic Bone Profiler (IGEA, Italy). Two parameters were analysed: AD-SoS (Amplitude Dependent Speed of Sound) and UBPI (Ultrasound Bone Profile Index). In a subgroup of 150 women randomly selected in the postmenopausal group, a DXA evaluation (lumbar spine and femoral neck) was carried out in order to identify osteoporotic, osteopenic and normal subjects. Subjects in postmenopause show significantly lower values of AD-SoS and UBPI compared to women at the climacteric (p<0.0001). A strict correlation between AD-SoS and age is observed in postmenopausal women (r=-0.44, p<0.0001), whilst at the climacteric the correlation is lower (r=-0.13, p<0.05).

When the group of subjects with QUS and DXA measurements were investigated, best performances were obtained when the selection of high risk patients was based on the presence of at least one of the 2 QUS parameters below the T-score threshold of -2.25SD. In this case 95.2% (20/21) of osteoporotic subjects were revealed and the overall percentage of missed cases is 0.7 %. This QUS threshold refers 45.3% (N=68) of patients to a further DXA examination. Among these 68 subjects, 20 are osteoporotic, 37 osteopenic and 11 normal. These results show a good performance of QUS at the phalanges as a screening tool to identify osteoporotic women in recent menopause, who otherwise would not have been identified as at risk.

Disclosures: **C. Cormier**, None.

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Calcaneal Ultrasound from Age 6 to Age 19. <u>K. M. Davies</u>, <u>J. M. Lappe</u>, <u>G. Lypaczewski</u>*. Osteoporosis Research Center, Creighton University, Omaha, NE, USA.

A cohort of healthy, white children and adolescents aged 6 to 19, 208 girls and 202 boys, was recruited for a cross-sectional study of bone ultrasound characteristics. The Osteometer DTU-One was used to measure speed of sound (SOS) and attenuation (BUA) in the calcaneus. When averaged by age group over each sex, SOS seems to change little if any, varying within a band 10 m/s wide about 1552 m/s. The BUA shows a rise from the age of 7 to about 17, increasing from about 35 dB/MHz to about 50, or about 43%. In the figure, error bars are standard error. The curves for boys and girls are similar. In this study, Tanner stage was self-assigned, and not useful for this analysis. In regression on the individuals, SOS depends on age, R^2 of 4% (P < 0.0001) and a change of 6.7 m/s on a base of 1551 m/s over 13 years. BUA depends on age and weight, R^2 is 47.5% (P < 0.0001), and the change of 16.7 dB/MHz on a base of 33.6 dB/MHz is 60% due to weight change and 40% due to age change. Conclusion: Change in calcaneal SOS is very slight and in BUA is substantial from age 6 to age 19, independent of sex.

Disclosures: **K.M. Davies**, None.