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Liver stiffness as a novel marker of metabolic syndrome?

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Background- Liver stiffness measurement by transient elastography is an attractive non-invasive method for the detection of fibrosis and cirrhosis in chronic liver diseases. Gender, obesity and metabolic syndrome are risk factors for fibrosis in chronic liver disease however their impact upon fibrosis among the general population is unclear. Aims-To prospectively explore the relationship between liver stiffness and metabolic factors in a population-based cohort of young adults. Methods- Liver stiffness measurements (LSM) were assessed using transient elastography in 1241 subjects from the Western Australian Pregnancy (Raine Study) Cohort from May 2010 to March 2012. Assessment included medical questionnaire, alcohol intake, anthropometric measurements, fasting serum liver function and biochemistry. Central obesity, hypertension and the metabolic syndrome (MS) were defined according to International Diabetes Federation (IDF) criteria. Linear regression was used to determine associations between log transformed LSM and components of the metabolic syndrome, BMI and sex. Results- Of the 1241 subjects assessed (634 [51%] males, mean age 20 years), 265 (21%) had central obesity, 206 (17%) had systolic hypertension and 57 (4.6%) had the metabolic syndrome based on IDF definitions. LSM was reliably determined by the interquartile range (IQR)/LSM≤0.3, ≥10 valid scans and success rate≥60%, in 1153/1241 (93%). Median LSM was higher in males than females (5.3 kPa [IQR 4.6-6.3 kPa] vs 4.5 kPa [IQR 3.7-5.4 kPa] p<2x10-16). LSM greater than 7.9kPa, which is predictive of significant fibrosis, was more common in males than females (51 (8.6%) vs 19 (3.4%), p=0.0002). LSM was significantly higher in obese subjects (median: 5.2 vs 4.9 kPa;p=0.027) and subjects with raised SBP or DBP (5.4 vs 4.8 kPa, p=2x10-9) and the metabolic syndrome (median: 5.7 vs 4.9 kPa, p=0.0002). However, in the multivariate analysis, central obesity and raised SBP were the predictors underlying the association between IDF MS and increased log LSM (p=0.002 and p=0.007, respectively) Conclusion- Obesity and hypertension are associated with greater liver stiffness in the general population of young adults.

Disclosures:

The following people have nothing to disclose: Eng K. Gan, John K. Olynyk, Julie A. Marsh, Oyekoya T. Ayonrinde, Trevor A. Mori, Lawrnce J. Beilin, Leon Adams