**THU-331**

# Derivation and validation of a cardiovascular risk score for prediction of major acute cardiovascular events in non-alcoholic fatty liver disease: The importance of an elevated mean platelet volume

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**Background and aims:** Cardiovascular disease is a key cause of morbidity in non-alcoholic fatty liver disease (NAFLD) but appropriate means to predict major acute cardiovascular events (MACE) are lacking. We aimed to design a bespoke cardiovascular risk score in NAFLD.

**Method:** A retrospective derivation (2008-2016, 356 patients) and prospective validation (2016- 2017, 111 patients) NAFLD cohort study was performed. Clinical and biochemical data were recorded at enrolment and mean platelet volume (MPV), Qrisk2 and Framingham scores were recorded one year prior to MACE (Cardiovascular death, myocardial infarction, stroke, and transient ischaemic attack).

**Results:** The derivation and validation cohorts were well matched with MACE prevalence 12.6% and 12% respectively. On univariate analysis, age, diabetes, advanced fibrosis, collagen proportionate area > 5%, MPV and liver stiffness were associated with MACE. After multivariate analysis, age, diabetes and MPV remained independently predictive. The 'NAFLD CV-risk score' was generated using binary logistic regression: **0.06* (Age) + 1.2* (MPV) + 0.135* (DM[1])-19.46** ***[1] Diabetes mellitus: 0: absent; 1: present.***

(AUROC 0.882). A cut-off of < -3.2 gave a Sensitivity 98%, Specificity 63%, PPV 26%, NPV 99%. An MPV alone of > 10.05 gave a sensitivity 97%, specificity 59%, PPV 24% and NPV 97% (AUROC 0.85). Validation cohort AUROCs were comparable at 0.75 (NAFLD CV-risk) and 0.72 (MPV). In the full cohort, the NAFLD CV-risk score and MPV outperformed both Qrisk2 and Framingham scores.

**Conclusion:** The NAFLD CV risk score and MPV accurately predict 1-year risk of MACE thereby allowing better identification of patients that require optimisation of their cardiovascular risk profile.

**Figure: Diagnostic performance of NAFLD CV risk score and MPV vs traditional scores.**

