CAP TE and PNPL's genetic polymorphism versus histopathology in characterization of NAFLD post living donor liver transplantation

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Summary and conclusion

NAFLD is now considered the ‘‘hepatic manifestation” of MS and closely mirrors the global epidemics of obesity and type T2DM. The spectrum of NAFLD covers two entities: simple steatosis and steatohepatitis, which is a progressive, fibrotic liver disease evolving to cirrhosis and its complications; HCC and ESLD potentially, requiring LT.

MS occurs in 40%–50% of patients after LT, both in patients with previous NAFLD (recurrent NAFLD) and in patients undergoing LT for other etiologies of CLD (de novo NAFLD).

We conducted the present study partially retrospective, partially prospective to evaluate the values of the Controlled Attenuation Parameter of Transient Elastography Imaging and Patatin- Like Phospholipase Domain-Containing Protein 3 rs738409-G as a risk factor in comparison to histological findings in Liver Biopsy for assessment of liver graft steatosis in Egyptian patients underwent LDLT in single center.

This study was conducted on **40** patients who had undergone liver transplantation for different etiologies. Patients were enrolled between January 2016 and August 2017.

Enrolled patients had undergone thorough clinical examination, anthropometric measurements (BMI, WC and WHR), assessment of biochemical parameters (including lipid profile and HbA1c in addition to the routine labs), abdominal ultrasound and Doppler, Transient elastography (TE), controlled attenuation parameter (CAP TE), Ultrasound guided liver biopsy revision and

DNA samples were genotyped for patatin-like phospholipase domain-containing protein 3 (PNPLA3) (rs738409).

Patients were classified into two groups according to steatosis presence by LB; group I (20/40 (50%)) had no steatosis and group II (20/40 (50%)) had steatosis (35% had S1 and 15% had S2). Both groups were homogenous regarding pre-operative, post-operative clinical data and post-operative laboratory data.

Results of the current study revealed that the mean **age** of the studied patients was (51.9 ± 8.6years) and 87.5% were males.

There was statistical significant correlation between the values of CAP in relation to steatosis of the graft with *(P value =0.001).* **CAP** showed AUC of 81.1% with best cut off ≥ 231dB/m at which sensitivity, specificity and accuracy were 90%, 70% and 74.4% respectively.

The comparison of rs738409 *PNPLA3* **C** and **G** alleles genotype distribution between patients in the studied cohort and the presence of steatosis showed no statistical significant difference between the two groups with (*p value = 0.7*). **G allele** genotype of rs738409 *PNPLA3* showed AUC of 45%. Its presence carried sensitivity, specificity and accuracy, 70%, 20% and 31% respectively.

There was no statistical significant difference between both groups as regard pre and post-operative BMI, other components of MS (HTN, DM and hyperlipidemia), anthropometric measurements (WC and WHR) and the type of immunosuppression used (almost all patients were on CNIs).

Based on results of the current study, we can conclude that:

- CAP TE is a promising tool for the daily routine care of patients following LDLT in characterization of graft steatosis and that it can replace LB in the nearby future in out-patient follow up.
- Recipient *PNPLA3* rs738409 genotype cannot be relied on in characterization of graft steatosis and fibrosis in liver transplant recipients underwent LDLT mainly due to HCV related CLD.