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Association of Vitamin D level and SLCO1B1 gene polymorphisms; rs2306283A>G and rs4149056T>C, with the risk of statin induced myopathy in Saudi Arabia

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Background & Aim: Lowering cholesterol with statin therapy results in substantial reductions in cardiovascular complications. Mild to moderate muscular symptoms occur especially when the statins are administered at high doses. Vitamin D deficiency is common in Saudi Arabia but also worldwide and may cause muscle dysfunction and ache. Previous observations in European populations showed that rs2306283A>G, p.Asn130Asp and rs4149056T>C, p.Val174Ala in solute carrier organic anion transporter 1B1 (SLCO1B1) gene encoding the organic transporter protein, may be responsible for statin uptake and thus explain the majority of statin associated symptoms. The aim of the present study was first to reveal a possible effect of Vitamin D (Vit D) status, rs2306283A>G and rs4149056T>C on muscle related symptoms, most importantly muscle ache and investigate possible interactions between Vit D status and the above-mentioned variants.

Methods: 50 individuals of Arab origin diagnosed with hypercholesterolemia (half of them with statin associated muscle symptoms) were recruited from outpatient clinics in Riyadh and underwent phenotypic data assessment including serum markers (lipid profile, creatine kinase and Vit D status). In addition, genomic DNA was extracted and genotyped using hybridization probes on a LightCycler® 96 Instrument Roche.

Results: Vit D status was associated with muscle ache (O.R=3.6, P=0.03). However, for creatine kinase levels, rs2306283A>G and rs4149056T>C we did not find associations. Interesting, both rs2306283A>G and rs4149056T>C were interacting with Vit D status to influence muscle ache (P=0.05 and P=0.02 respectively). When stratified according to Vit D status, rs4149056T>C showed a significant association with muscle ache (P=0.05).

Conclusion: Our preliminary results show an involvement of Vit D and rs4149056T>C of SLCO1B1 in statin induced muscle ache. This result encourages us to increase our sample size to confirm our findings.

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