The IAS statin literature update will keep you up-to-date with all recent statin publications, using a curated approach to select relevant articles.

Key publications

Shift in targets: from LDL- to Apo B (Non-HDL-c)
Current guidelines focus on LDL-c as the primary target. However, based on accumulating data from large registries and clinical trials, more accurate markers such as apo B and Non-HDL-care suggested to improve accuracy. In this analysis of the Copenhagen General Population Study 13,015 statin users, with a median follow-up time of 8 years, apo B, Non-HDL-c, and LDL-c were compared for their prowess to predict mortality and myocardial infarction (MI) risk. Patients with increased apo B, above the median, to patients with LDL-c below the median resulted in an HR: 1.21 (1.07-1.31) for all-cause mortality and an HR: 1.49 (1.15-1.92) for MI. Performing a similar calculation for non-HDL-c and LDL-c resulted in HR's of 1.18 (1.02-1.36) and 1.78 (1.35-2.34), respectively. This contrasted with discordant LDL-c compared to low apo B and low Non-HDL-c, which was not associated with increase MI or mortality risk. Comparing discordant high apo B with low Non-HDL-c resulted in an increased risk for total mortality and MI; HR: 1.21 (1.03-1.41) and HR: 0.93 (0.62-1.40). A higher than the median plasma concentration of apo B + Non-HDL-c compared to a below-median value of LDL-c resulted in an HR:1.23 (1.07-1.43) for all-cause mortality and an HR: 1.82 (1.37-2.42) for MI. Based on these findings, the authors concluded that both Apo B and Non-HDL-c, not LDL-c, are associated with residual risk for all-cause mortality and MI in statin-treated patients. Discordance analysis showed that apo B is a more accurate marker for all-cause mortality when compared to LDL-c and Non-HDL-c. This was also observed for MI when compared to LDL-c.
Johannesen CDL, Mortensen MB, Langsted A, Nordestgaard BG. Apolipoprotein B and Non-

Comparing LDL-c lowering effects of different statin in FH patients
Optimal LDL-c management in familial hypercholesterolemia (FH) patients requires the use of high-dose potent statins as well as the combination of statins with ezetimibe or PCSK9ab. The Spanish Arteriosclerosis Society Registry was queried for probable/definite FH patients. Data drug therapy and lipid profile were available for 2894 patients. Patients with confirmed genetic mutation showed better LDL-c reductions when compared to definite FH patients that lacked a genetic mutation. Suboptimal response to statins (<15% or <30% LDL-c reduction) was noted in 13.5% of FH patients with a mutation compared to 20.3% definite FH patients but without a mutation. The reduction of LDL-c ranged from 30.2 ±17.0% in patients treated with simvastatin 10 mg to 48.2 ±17.0% in patients that received rosuvastatin 40 mg. Adding ezetimibe to rosuvastatin 5, 10, 20, and 40 mg resulted in an additional LDL-c reduction of 26, 24, 21, and 24%, respectively. When statins were ranked for their potency to reduce LDL-c, rosuvastatin was the most potent, followed by atorvastatin and simvastatin. However, maximum dosages of atorvastatin and rosuvastatin were nearly equivalent. The authors noted that approximately 1 in 5 FH patients had a suboptimal response on high-dose, high-intensity statins.

Antecedent statin use associated with improved mortality in hospitalized COVID-19 patients
In the quest for repurposing existing drugs for improving outcomes in COVID-19 patients, statins are likely to provide benefits. In this retrospective study of 1014 patients from a single academic US hospital and with confirmed PCR diagnosis, patients with antecedent use of statins (N= 454) were compared to those that were not using statins before admission (N= 560). Based on a multivariate regression model, statin use was associated with a reduced total mortality compared to no statins; OR: 0.66 (0.64-0.95; p=0.03). Using a propensity score-matched analysis, comparing 233 statin users with 233 patients not prescribed statins prior to hospital admission, a significant reduction of total mortality was observed as well; OR:0.56 (0.37-0.83; p=0.004). Statin use was associated with significantly improved survival of patients with COVID-19. These observational findings warrant the pursuit of randomized controlled trials to confirm these findings.

Managing LDL-c in FH patients; a 10-year follow-up study
The increased risk of premature ASCVD events is well documented, with new and potent add-on LDL-c lowering drugs such as PCSK9ab achieving guideline-recommended targets are becoming realistic. The effects of intensive lipid management were evaluated in the Treat To Target FH (TTTFH) study. Included were 357 adults with mean total cholesterol of 9.8 mmol/L; 279 patients came for a follow-up visit after a median period of 10-years. A pathogenic mutation was present in 86.4% of the participants; the remaining13.6% were clinically diagnosed. LDL-c was reduced to 3.0 (2.9-3.9) mmol/L. High-intensity statins were used by 85.2% of the men and 60.8% of the women. Mean LDL-c was higher in women 3.3 mmol/l compared to men 2.8 mmol/L (P=0.004). Patients that used PCSK9ab (N=25) were able to achieve a mean LDL-c of 2.0 mmol/L. At study entry, 57 patients (20.4%) were diagnosed with ASCVD, and a recurrence was observed in 46 patients (80.4%). In the 222 primary prevention patients (79.8%), 29 (13.1%) develop a first-time ASCVD event during the study. FH patients managed at a specialized lipid clinic and treated intensively were able to
achieve a mean LDL-c of 3.0 mmol/L, and only a few patients were using PCSK9ab. Those with manifest ASCVD at the study start had a very high risk for recurrences (80.7%) during the 10-year follow-up; this contrasted with the limited ASCVD risk observed in FH patient free CVD complications (13%).


Systematic review of statin use in cirrhotic patients
This systematic review evaluated the safety and efficacy of statin use in patients with cirrhosis. Using the common bibliography resources, 22 articles and two drug monographs. The authors set out to address pharmacokinetics (PK), safety, and CV outcomes in cirrhotic patients that use a statin. For patients with Child-Pugh class A cirrhosis, only minimal PK changes were observed in patients that used rosuvastatin and pitavastatin. Pronounced PK changes were noted for atorvastatin. No studies with simvastatin addressed PK changes, although this was the most frequently used statin. It was not possible to establish effects on CV outcomes due to a lack of data. Only simvastatin, atorvastatin, and pravastatin were used in clinical studies. Rhabdomyolysis frequency was 2% in patients that used simvastatin 40 mg, a 40-fold increase compared to rhabdomyolysis reports in non-cirrhotic patients. For patients that used simvastatin 20 mg, atorvastatin 20 mg, or pravastatin, no rhabdomyolysis was reported. No over liver failure and no Drug-induced liver injury (DILI) were reported. Based on these limited reports, the authors recommended refraining from using simvastatin 40 mg in patients with advanced cirrhosis. Insufficient safety data was available for simvastatin 20 mg and the other statins. The lack of data, and evidence on dose adjustments, does not support the use of statins to reduce CV risk or improve hepatic outcomes in patients with advanced cirrhosis.


Relevant publications


Basic Science publications


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