

Comparative effects of atorvastatin and rosuvastatin on vitamin D levels, glucose metabolism and systematic inflammation in non-diabetic patients with dyslipidaemia: a prospective randomized open-label study

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Introduction

- Low levels of 25-hydroxy-vitamin D [25(OH)D] have been recognized as a new cardiovascular disease risk factor.
- Conflicting data exist regarding the effect of statins on 25(OH)D levels and glucose metabolism.

Aims

The purpose of this study was to compare the effects of atorvastatin and rosuvastatin at equivalent doses on 25(OH)D levels, glucose homeostasis and systemic inflammation in non-diabetic patients with dyslipidaemia.

Patients and methods

- This was an open-label randomized prospective comparative study
- Fifty-two patients were randomly assigned to **atorvastatin** 20 mg/day (n=28, aged 56.1±2.2 years, 22 females) or **rosuvastatin** 10mg/day (n=24, aged 57.4±1.9 years, 20 females).
- Total cholesterol (TC), low-density lipoprotein cholesterol (LDL-C), high-density lipoprotein cholesterol (HDL-C), triglycerides (TG), fasting plasma glucose, insulin, homeostasis model assessment-insulin resistance (HOMA-IR), glycosylated hemoglobin A1c (HbA1c) and high-sensitivity C-reactive protein (hsCRP) levels were measured at baseline and after 12 weeks.

Inclusion criteria:

Non-diabetic patients >18 years old, with dyslipidemia, without having achieved the LDL-C goal, based on the NCEP-ATPIII criteria

Exclusion criteria:

- Diabetes mellitus
- Thyroid dysfunction
- Active neoplasms
- Corticosteroids
- Any hypolipidemic or anti-obesity medication
- Increased transaminase (>3-fold) or creatine phosphokinase levels (>5-fold)

Results

- There were no differences in baseline characteristics between the 2 groups.
- Both statins significantly reduced TC, TG and LDL-C levels. The reduction in LDL-C was greater with rosuvastatin (49.4% vs 41.7%, p=0.015).
- The increase in 25(OH)D levels with both statins was not statistically significant [from 21.7±1.9 to 23.5±2.3 ng/ml with atorvastatin (p=0.205) and from 25.3±1.8 to 27.0±2.4 ng/ml with rosuvastatin (p=0.306)].
- Rosuvastatin was associated with a significant reduction in insulin levels [from 6.7±0.8 to 5.2±0.7 µIU/ml, (-8.5%), p=0.048], although not in HOMA-IR. The respective changes with atorvastatin were not significant.
- The effect of both statins on fasting glucose and HbA1c levels was neutral.
- Regarding systematic inflammation, only atorvastatin significantly reduced hsCRP levels [from 4.1±1.4 to 3.0±0.7 mg/l (-13.5%), p=0.025].

Conclusions

- ✓ Statins did not affect 25(OH)D levels in the present study.
- ✓ Rosuvastatin was associated with a reduction in insulin levels without affecting insulin resistance, while the effect of atorvastatin on glucose homeostasis was neutral.
- ✓ However, atorvastatin, led to a significant reduction in systematic inflammation compared with rosuvastatin.

References

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