Reviewer's report

Title: Effect of statin therapy on the progression of coronary atherosclerosis: new insights through meta-analysis

Version: 3 **Date:** 22 February 2012

Reviewer: Grzegorz Kopec

Reviewer's report:

Authors made a metaanalysis of 17 studies to check whether statins reduce plaque volume and composition as assessed by IVUS. Additionally they analyzed whether the achieved LDL-cholesterol level, duration of follow - up and primary diagnosis (stable CAD vs ACS) influence the effect.

The authors cite another metaanalysis from 2007 (no 5 in the reference) which had similar objectives. The new in the current study is an analysis of plaque composition, and the effect of primary diagnosis. Additionally new studies are includied into the metaanalysis.

The main conclusions are:

1. statins reduce the volume of coronary plaque but only when low LDL-C levels are achieved and this effect is greater in ACS than in stable angina

2. statins do not change the composition of coronary plaque

I think that the conclusions are interesting however there are several significant limitations to the study thus I recommend major compulsory revision.

General comment:

Style and language are not appropriate - the paper is very difficult to read, it needs significant improvement; authors should chose the tiem (past or present) they use in the consequtive paragraphs

Specific comments:

I. Bacground -

- sentence 3: in patients with CAD we do not use primary prevention,

- I suggest not tu use "plaque component volume" but plaque composition"

II. Methods:

4.1 last sentence: why these papers were manually checked? is the sentence necessary? what does it mean?

4.2 the first criterium is not clear; please clarify

4.3 first sentence - how did the authors review the "hidden financial assistance situation"? - was this necessary for the study?; there is no further discussion about it

4.6. Authors say that they calculated MD - they should explain the abbreviation

III. results:

- sentence 1.

comment: what do the authors mean by "statins in 3 groups"? probably it should be stated "different statins in 3 groups"

- sentence 2.

comment: the word "definitely" is unnecessary

- sentence 3. it is said:" The rest 4 groups did not definitely excluded patients with ACS."

comment: it is not clear who was included in the studies

- sentences 5-9: authors should show not only the mean values of age, LDL-C and so on but also SD

- last sentence : instead "increase or decrease" it should be used :"change"

IV. Discussion:

- 3rd sentence: "decrease in plaque size while achieved LDL-C levels are 70-100 mg/dl or less; while achieved LDL-C levels are greater than 100 mg/dl; there is no significant decrease." it should be written "decrease in plaque size only when LDL-C<100 mg/dl"

- 6th and 7th sentence the authors say that plaque composition did not change during statin therapy and give only one possible explanation which is "low statistical power". The authors should discuss this important observation in a separate paragraph; if they think that the statistical power was the reason they should prove it

- Authors use one paragraph to review pleiotropic effects of statins; instead they should explain how pleiotropic effects influence their results,

- table 1 - authors should explain under the table "I2"

Level of interest: An article of importance in its field

Quality of written English: Not suitable for publication unless extensively edited

Statistical review: Yes, but I do not feel adequately qualified to assess the statistics.

Declaration of competing interests:

'I declare that I have no competing interests'