

# IMPACT OF STATINS ON PRESENCE OF BCL2-POSITIVE MACROPHAGES

Milana M. Bosanac<sup>1</sup>, Golub D. Samardžija<sup>2,3</sup>, Jelena P. Amidžić<sup>1,4</sup>, Maja Z. Stefanović<sup>3,5</sup>, Teodora M. Pantić<sup>3</sup>, Nevena Đ. Djumić<sup>6</sup>, Vesna M. Mijatovic Jovin<sup>7</sup>, Bojana M. Andrejić Višnjic<sup>1</sup>



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Sekcija za kliničku farmakologiju "Dr Srdjan Djani Marković"  
Srpsko lekarsko društvo

<sup>1</sup>Department of Histology and Embryology, Faculty of Medicine, University of Novi Sad, Novi Sad, Serbia

<sup>2</sup>Department of Pathology, Faculty of Medicine, University of Novi Sad, Novi Sad, Serbia

<sup>3</sup>Institute for Cardiovascular Diseases of Vojvodina, Sremska Kamenica, Serbia

<sup>4</sup>Department of Pathology and Cytology, General Hospital Vrbas, Vrbas, Srbija

<sup>5</sup>Department of Emergency Medicine, Faculty of Medicine, University of Novi Sad, Novi Sad, Serbia

<sup>6</sup>Faculty of Medicine, University of Novi Sad, Novi Sad, Serbia

<sup>7</sup>Department of Pharmacology and Toxicology, Faculty of Medicine, University of Novi Sad, Novi Sad, Serbia

## Background:

Statins have many pleiotropic effects. Beside those, there are indications that they affect macrophage survival.

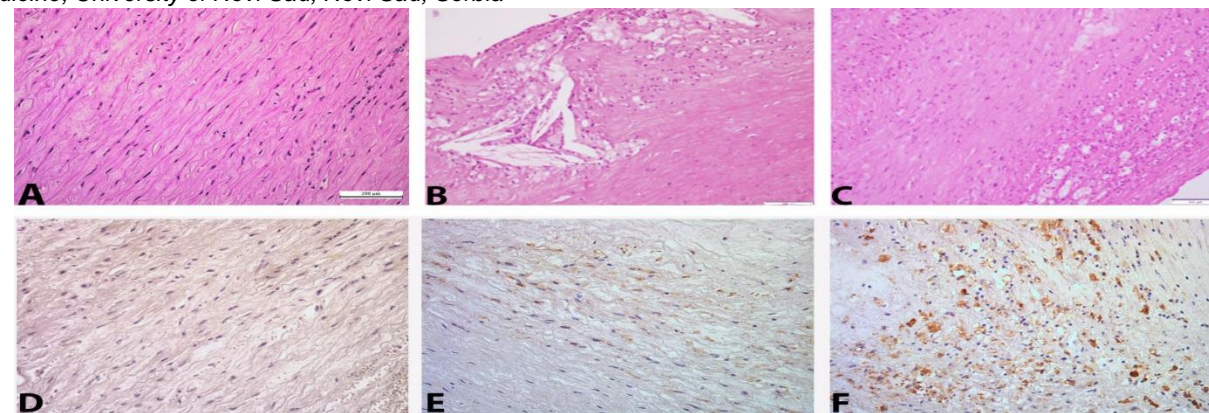
## Materials and methods:

Aortic wall tissue of 50 patients was analysed, some of whom did not (nonS, n=25) and some of whom had statin therapy (S, n=25). Each group had samples of healthy aortic tissue, mild and severe atherosclerotic changes. Tissue was stained with hematoxylin-eosin and immunohistochemically (anti-Bcl2 antibody). Presence of Bcl2-positive macrophages (Bcl2+MP) was determined semiquantitatively.

## Results:

S-group healthy aortas had significantly increased presence of Bcl2+MP opposite to nonS (80% vs 6,67%). Most frequently, increased Bcl2+MP were found in intima and media of aortic wall. S-group pathologically altered aortas more often had marked Bcl2+MP increase (36,25% vs 25%).

Atherosclerotic samples of the S-group (both mild and severe) had a marked increase in Bcl2+MP significantly more frequent compared to nonS. Marked Bcl2+MP increase in atherosclerotic plaques of group S, compared to nonS, is statistically more often found in the subintimal part of the plaque and at the border with the media of the aorta.



**Figure 1.** Aortic wall: A - absence of pathohistological changes (HE, 200x); B - mild atherosclerosis (HE, 200x); C - severe atherosclerosis (HE, 100x); D - grades 0 and 1 -normal presence of Bcl-2+ MP (BCL-2, 200x); E - grade 2 - mild increased number of Bcl-2+ MP (BCL-2, 200x) and F - grade 3 - markedly increased number of Bcl-2+ MP (BCL-2, 200x).

**Table 1.** Presence of Bcl-2+ MP in healthy aortic tissue aortic tissue with pathohistological changes

| Bcl-2+ macrophages | Healthy aortic tissue |      | Pathohistological changed tissue |        |
|--------------------|-----------------------|------|----------------------------------|--------|
|                    | Th-nonS               | Th-S | Th-nonS                          | Th-S   |
| Normal             | 93.4%                 | 20%  | 29.5%                            | 23.75% |
| Mild increase      | 6.67%                 | 60%  | 42,5%                            | 40%    |
| Marked increase    | 0%                    | 20%  | 25%                              | 36.25% |

**Table 3.** Presence of Bcl-2+ macrophages

| Bcl-2+ MP       | T.Intima |       | T.Media |        | T.Adventitia |       |
|-----------------|----------|-------|---------|--------|--------------|-------|
|                 | Th-nonS  | Th-S  | Th-nonS | Th-S   | Th-nonS      | Th-S  |
| Normal          | 80%      | 0%    | 100%    | 0%     | 100%         | 40%   |
| Mild increase   | 20%      | 40% * | 0%      | 100% * | 0%           | 40% * |
| Marked increase | 0%       | 60%†  | 0%      | 0%     | 0%           | 0%    |

**Legend:** \* - statistically significant difference in level  $p < 0.05$ , † - statistically significant difference in level  $p < 0.01$ .

## Conclusion:

Statins attributed to greater number of Bcl-2+MP by enhancing antiapoptotic factors, both in healthy and atherosclerotic altered aortic tissue. This can lead to potentiation and prolongation of inflammation. Since inflammation can cause damage to the aortic wall, and rupture of the plaques, it calls into question the positive effect of statins on the aortic wall with atherosclerosis.