The "Intermediate" CD14(++)CD16(+) monocyte subset increases in severe peripheral artery disease in humans.

Monocytes are key players in atherosclerotic. Human monocytes display a considerable heterogeneity and at least three subsets can be distinguished. While the role of monocyte subset heterogeneity has already been well investigated in coronary artery disease (CAD), the knowledge about monocytes and their heterogeneity in peripheral artery occlusive disease (PAOD) still is limited. Therefore, we aimed to investigate monocyte subset heterogeneity in patients with PAOD. Peripheral blood was obtained from 143 patients suffering from PAOD (Rutherford stage I to VI) and three monocyte subsets were identified by flow cytometry: CD14(++)CD16(-) classical monocytes, CD14(+)CD16(++) non-classical monocytes and CD14(++)CD16(+) intermediate monocytes. Additionally the expression of distinct surface markers (CD106, CD162 and myeloperoxidase MPO) was analyzed. Proportions of CD14(++)CD16(+) intermediate monocyte levels were significantly increased in advanced stages of PAOD, while classical and non-classical monocytes displayed no such trend. Moreover, CD162 and MPO expression increased significantly in intermediate monocyte subsets in advanced disease stages.
Likewise, increased CD162 and MPO expression was noted in CD14(++)CD16(-) classical monocytes. These data suggest substantial dynamics in monocyte subset distributions and phenotypes in different stages of PAOD, which can either serve as biomarkers or as potential therapeutic targets to decrease the inflammatory burden in advanced stages of atherosclerosis.