A06-4 Regulation of macrophage functions by tenascin-C

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<Background and Purpose>
Chronic inflammation is currently considered to be implicated in the development of various diseases including cancer. Many studies have demonstrated the pivotal role of macrophage as a regulator of chronic inflammation. On the other hand, tenascin (TN) -C have been reported to be highly expressed during inflammation. We previously found that a peptide derived from TN-C, termed TNIIIA2, has the ability to modulate various cellular processes through integrin activation. Here, we investigated about whether the effect of TN-C and its active peptide TNIIIA2 could participate in regulation of macrophage functions.

<Methods>
In this study we used murine macrophage-like cell line, Raw 264.7 cells and TGC-elicited mouse peritoneal macrophages. Phagocytic activity was determined by evaluating phagocytosis of latex beads. The gene expression was analyzed by real-time PCR. The production of NO was examined according to the Griess test. Effect of TN-C/TNIIIA2 on macrophage differentiation was evaluated, in which effect on the PMA-induced differentiation of human monocyte-like cell line, THP-1, to macrophage was observed.

<Results and Discussion>
TN-C/TNIIIA2 significantly enhanced phagocytic activity of both Raw264.7 and mouse peritoneal macrophages. On the other hand, up-regulation of inflammatory mediators such as MMP-9 and TNF-alpha was observed when macrophages were stimulated with TNC/TNIIIA2. In this experimental condition, enhanced production of NO was accompanied by an increased expression of iNOS. Furthermore, TN-C/TNIIIA2 also accelerated PMA-induced differentiation of THP-1 cells to macrophages.

Thus, both TN-C and TNIIIA2 were shown to be able to activate macrophage functions. TN-C seems to serve as a transient modulator for macrophage function in inflammatory area, for which the activity of peptide TNIIIA2 may be responsible.