Inflammatory microcrystals induce murine macrophage survival and DNA synthesis

ABSTRACT

In vitro treatment of murine bone-marrow with microcrystals, cell numbers were monitored over time and the addition of [methyl-3H]thymidine (TdR) was measured as a measure of DNA synthesis: we report that BCP, monosodium urate, talc and lesser amount of CPPD crystals promote macrophage survival and DNA synthesis; the latter response is especially significant in the presence of low levels of macrofamilial M-CSF-1 cells.

INTRODUCTION

Introduction The mechanism of action of the inflammatory microcrystals is not well understood. While microcrystals are present in the blood stream, their actions are thought to be mediated by cellular factors. In this work, we aimed to determine whether microcrystals induce DNA synthesis in murine macrophages and to further investigate the influence of different factors on DNA synthesis.

Methods:

We used a murine model of lung cancer to investigate the effect of the inflammatory microcrystals on DNA synthesis. We used a human murine model of lung cancer to investigate the effect of the inflammatory microcrystals on DNA synthesis. We used a human murine model of lung cancer to investigate the effect of the inflammatory microcrystals on DNA synthesis.

Results:

We show that the microcrystals induce the expression The deposition of calcium pyrophosphate dihydrate (CPPD) crystals has been associated with acute inflammatory arthritis, or pseudopseudogout, and is often found in the joints of patients with deposits of CPPC. Histologically, these crystallize as synovial-cell hyperplasia and infiltration by mononuclear ILs; CFOS can also be triggered by BCP crystal but shares many of the fundamental mechanisms of cell activation used by UDCG, which is frequently linked to more aggressive Inhaling aerosols of bioreamed talc and surgical gloves can trigger inflammatory reactions in the lung or peritoneal adhesions. Exposure to trichloroguanine (talca) causes granulomas with macrophages, while injecting it into rabbit knees results in synovitis. Macrophage-colony-stimulating factor (M-CSF), or colony stimulating factor-1 (CSO-1), plays a crucial role in the regulation of macrophage lineages and their function in various parts of the body. In vivo evidence indicates that CSF-1 is essential for the development of both synovial and peritoneal macrofamilial cells. Normally, the synovium contains one cell type that interacts in vivo with the crystals mentioned above, and is known as the macrophage. We have previously demonstrated that various substances, such as oxLDL, adjuvants, or -amyloid and prion protein fibrillogenic proteins (in preparation for manuscript publication), can induce macroprote survival and proliferate under circulating CSF-1 concentrations. However, we now report that BCP, MSU, talc,and CPPD both promote gene synthesis

CONCLUSION

BCP, MSU, talc, and CPPD all have an impact on the survival and DNA synthesis of murine macrophages, with low CSF-1 concentrations promoting their survival or proliferation. This may also enhance the chances of synovial hyperplasia and inflammation caused by stalactite in crystal-associated arthropathies; therefore, the above-mentioned crystals can be included in the list of particulates that have these effects on macrophaphaergic molecule interactions.