The role of fibrocytes in mesenteric Crohn’s disease.

M.G. Kiernan1, S.M. Sahebally1,2, P.A. Kiely1, D. Waldron2, M. Moloney3, M. Skelly3, P.N. Faul4, D.P. O’Leary2, A.J. Lowery1,2, L.G. Walsh1,2, C.P. Dunne1, J.C. Coffey1,2

1University of Limerick, Graduate Entry Medical School and Centre for Interventions in Infection, Inflammation and Immunity (4i), Limerick, Ireland, 2University Hospitals Limerick, Department of Surgery, Limerick, Ireland, 3University Hospitals Limerick, Department of Gastroenterology, Limerick, Ireland, 4University Hospitals Limerick, Department of Pathology, Limerick, Ireland

Background
The mesentery in Crohn’s disease frequently displays disease manifestations, such as mesenteric thickening and fat wrapping. Fibrocytes are a precursor cell type that can differentiate into fibroblasts or adipocytes [1]. They have previously been identified in the mesentery in inflammatory conditions such as mesenteric panniculitis [2]. This study aimed to investigate the role of fibrocytes in Crohn’s mesenteric disease manifestations.

Methods
Ethical approval and informed consent were obtained from the HSE Mid-Western Regional Hospital Research Ethics Committee. Circulating and mesenteric fibrocytes were identified and enumerated by flow cytometric and immunohistochemical analysis. Mesenteric disease was quantified using a novel disease activity index. Disease was graded based on the presence and extent of mesenteric thickening and fat wrapping. The relationship between circulating fibrocytes and mesenteric disease was investigated. Serologic cytokine levels were assessed by cytokine array technology in Crohn’s disease patients (n=9) and healthy controls (n=4).

Results
Circulating fibrocytes were increased in Crohn’s disease (n=20) when compared with healthy controls (n=16) (8.0 ± 5.64 vs. 2.6 ± 1.68%, p=0.003, independent t-test). Fibrocytes were also increased in Crohn’s disease mesentery but were not identified in normal mesentery. They were normally found in clusters at the intestinal surface and adjacent to the blood vessels. Levels of circulating fibrocytes increase as mesenteric disease scores increase, i.e. as severity of disease increases (r=0.81, p<0.0001). The circulating cytokine profile in Crohn’s disease was pro-fibrotic and pro-inflammatory. Several cytokines associated with fibrocyte migration and differentiation were elevated in Crohn’s disease, such as TGF-β1 (p<0.01), Eotaxin-2 and RANTES.
Conclusions
Fibrocytes were increased in Crohn’s disease, both systemically and within the mesentery. An increase in circulating fibrocytes was associated with increased mesenteric disease severity. Cytokines involved in fibrocyte recruitment are elevated in Crohn's disease.

References:

Authors
First author: Miranda G. Kiernan
Presented by: Miranda G. Kiernan
Submitted by: Miranda G. Kiernan
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