The aim of the study was to evaluate the potential role of chemokine receptor CXCR4 and its ligand CXCL12 in the pathogenesis of abdominal aortic aneurysm (AAA). AAA tissue specimens were obtained from the anterior or lateral aneurysm sac of patients (n = 32, 26 males, 6 females; 66.8 ± 11.2 years, diameter 64.4 ± 17.0 mm), who underwent elective open surgical repair. Twelve non-aneurysmal aortic specimens from transplant donors served as controls. Expression analysis of CXCR4 and CXCL12 at mRNA and protein level was determined by quantitative reverse transcription-polymerase chain reaction (RT-PCR) and western blot. Immunohistochemical staining of corresponding histological sections for CD3 (T-cells), CD20 (B-cells), and CD68 (macrophages) was performed to determine the cellular localization of CXCR4 and CXCL12. Data were analyzed with SPSS 20.0 using Mann-Whitney U test and Spearman's rank correlation coefficient. Gene expression of CXCR4 and CXCL12 was 9.6 and 4.6 fold higher in AAA than in non-aneurysmal aorta (p = .0004 and p< .0001, respectively). Likewise, the protein level of CXCR4 was increased 3.2 fold in AAA wall compared with non-aneurysmal aortic tissue (p< .0001), although CXCL12 could not be detected. Immunohistochemical analysis revealed that CXCR4 was expressed...
in B and T lymphocytes and macrophages, and CXCL12 was observed only in plasma cells. This study confirmed the over expression of CXCR4 in human AAA tissue. CXCR4 was detected both at the mRNA and the protein level and by immunohistochemistry, especially in inflammatory cells. In contrast, CXCL12 expression was observed only at the mRNA level, with the exception of plasma cells. The exact role of CXCR4/CXCL12 in AAA has to be further elucidated.

Zeitschriftentitel / Abkürzung:
Eur J Vasc Endovasc Surg

Jahr: 2015
Band: 50
Heft / Issue: 6
Seiten: 745-53
Sprache: eng
Print-ISSN: 1078-5884

TUM Einrichtung:
Klinik für Gefäßchirurgie; Chirurgische Klinik und Poliklinik; Institut für Allgemeine Pathologie und pathologische Anatomie

Occurences:
- Einrichtungen > Fakultäten > Fakultät für Medizin > Kliniken und Institute > Klinik und Poliklinik für Gefäßchirurgie > Fachgebiet Gefäßchirurgie (Prof. Eckstein) > 2015
- Einrichtungen > Fakultäten > Fakultät für Medizin > Kliniken und Institute > Chirurgische Klinik und Poliklinik > 2015

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