RANTES – Relevance for NICO osteonecrosis

What is RANTES?

RANTES (= **R**egulated **A**nd **N**ormal **T** cell **E**xpressed and **S**ecreted) is a chemokine with chemotactic unction. Sometimes it is also termed CCL-5.
Cytotoxic T lymphocytes (CD28+/CD8+), as well as neutrophil and eosinophil granulocytes produce and secret RANTES after activation.

Chemotaxis and activation of immune responses are the most important functions

RANTES has chemotactic unction, which means that it induces the attraction of NK cells, granulocytes, monocytes, and macrophages into an existing inflammatory area. It interacts with these cells by binding onto surface receptors, such as CCR3, CCR5, and CCR1. Hence, RANTES is involved in many diseases that entail inflammatory processes. Together with interleukin-2 (IL-2) and interferon gamma (IFN-γ), RANTES causes the activation of NK cells and stimulates their proliferation.

RANTES as a marker for inflammation?

Increased RANTES levels in blood occur in various systemic inflammatory diseases, such as rheumatism, allergies, asthma, multiple sclerosis, and some tumour diseases. Until today, RANTES has not gained importance as a laboratory marker for chronic inflammatory diseases, since TNF-α, IP-10 and IL-6 are far more sensitive markers.

RANTES in context with osteitis of the jaw (NICO)

Studies conducted by Dr. Johann Lechner (Munich) indicate a direct conjunction of RANTES and patients with osteonecrosis of the jaw (NICO). The study proved that the fatty, osteolytic surgery tissue of NICO (neuralgia-inducing cavitational osteonecrosis) possessed very high local RANTES levels in all cases. Marker cytokines of acute inflammation, such as IL-1β or IL-6, were, on the contrary, hardly measurable within the surgery tissue.

What do elevated RANTES levels in blood indicate?

Hitherto, increased RANTES levels in blood have been proven a useful indicator of local inflammatory processes. This may involve residual osteitis of the jaw, however RANTES as a systemic inflammatory marker is not specific for this type of inflammation. RANTES levels in blood may increase in context with other inflammatory diseases (bacterial infections, systemic autoimmune diseases) as well. Therefore, in case of increased RANTES levels in blood, a residual jawbone osteitis and corresponding diagnostics are worth considering. However, if overall symptoms do not indicate the disease, insisting on the diagnosis is not recommended. Furthermore, persisting, slightly elevated RANTES levels after surgery do not indicate a residual osteitis. We recommend simultaneous testing of other inflammatory markers (hsCRP, TNF-α), especially since a NICO should be considered in case of inconspicuous results.

Material

1 ml serum

Costs

Costs for the test are 28.86 €.

Literature

- Dr. J. Lechner, 2011, Neuralgie induzierende Hohlraumbildende Osteonekrosen (NICO) – Immunmediatoren und Systementgleisungen, UMG 2/2011
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