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JOURNAL ARTICLE

Levels of hepatocyte growth factor/scatter factor (HGF/SF) in seminal plasma of patients with andrological diseases

C. E. Depuydt, C. R. De Potter, A. Zalata, E. Baekelandt, E. Bosmans and F. H. Comhaire

Department of Internal Medicine, University Hospital Ghent, Belgium.

Hepatocyte growth factor/scatter factor (HGF/SF) has all the characteristics of a molecule suitable for functioning in regulatory networks of motility, such as the spermatogenic epithelium, where spermatogenic cells must migrate between the cells of Sertoli, and it exerts its effect through binding of its high-affinity receptor (c-met). Considering the findings that c-met receptor is expressed in the human testis and on spermatozoa, and that HGF/SF in seminal plasma consists of pro-HGF/SF, mature alphabeta-HGF/SF, and less active forms of HGF/SF, we investigated the concentration and biological activity of HGF/SF in seminal plasma and their correlation with parameters of spermatogenesis to obtain better insight into mechanisms that may be involved in the pathogenesis of male infertility. We also evaluated the potential value of assessment of hepatocyte growth factor concentration and its bioactivity for the diagnosis of certain pathological conditions of male reproduction. We studied the concentration and biological activity of HGF/SF in seminal plasma of normal men and of patients with a range of andrological diseases or conditions by measuring HGF/SF in seminal plasma by enzyme-linked immunosorbent assay and by scatter assay using Madin-Darby canine kidney epithelial cells. We identified three sources of HGF/SF in seminal plasma. In samples from vasectomized men (n = 30; 2.01 ng/ml) and in split ejaculate samples (n = 6; 1e fraction 2.75 ng/ml, 2e fraction 1.62 ng/ml), a prostatic origin can be certified. This HGF/SF has low biological activity (133.3 U/ml). In inflammation of the accessory sex glands (n = 40), a high amount of HGF/SF (3.04 ng/ml) can be generated by white blood cells and has moderate scatter activity (426.7 U/ml). In normozoospermic samples, there is a lower amount of HGF/SF (1.12 ng/ml), with strong scatter activity (1280.0 U/ml). Finally, the clear difference between the low amount of HGF/SF (1.06 ng/ml) with poor scatter activity (106.6 U/ml) in oligozoospermic samples (n = 28) and the high amount of HGF/SF (3.35 ng/ml) with strong scatter activity (853.3 U/ml) in samples from men with azoospermia of primary testicular failure (n = 18) suggests a mainly testicular origin, with different activity in different pathological conditions.

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