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LETTER TO THE EDITOR

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Angiogenic factors in serum of patients with testicular germ cell tumours

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I read with interest the article by Bentas et al. [1] evaluating the serum levels of basic fibroblast growth factor (bFGF), vascular endothelial growth factor (VEGF) and platelet derived growth factor (PDGF) in patients with testicular germ cell tumours. I would like to discuss some methodological problems that have arisen.

PDGF and VEGF are stored in platelet α granules and are released during blood clotting. Unfortunately, the authors did not report the interval between venipuncture and the separation of serum from the blood cells, which is relevant and should be standardized. Serum VEGF concentrations increase in a time-dependent manner during clotting [2]. In a clinical situation, where blood samples are processed after variables times, the contribution from the clotting process may interfere with the measurement of VEGF levels at the time of sampling and may invalidate the results. Allowing the whole blood sample to clot for between 2 and 6 h before the serum is collected reduces the time-dependent, non-uniform release of VEGF [3]. In addition, although the authors reported the centrifugal force used during sample processing, the length of centrifugation was not indicated. Spinning the samples for different times may affect the serum VEGF levels [4].

Recent studies suggested that platelet-derived VEGF reflects the biology of cancer cells, and serum should be used for the measurement of VEGF levels in cancer patients [5]. However, serum VEGF concentrations reflect blood platelet counts rather than VEGF synthesis by peripheral tissues [2, 6], and serum VEGF concentrations are up to 20 times higher than the matched plasma VEGF concentrations [2]. In plasma, platelet degranulation is minimized by adding anticoagulants to the blood samples. CTAD (citrate, theophylline, adenosine, dipyridamole) tubes should be used to measure circulating extracellular VEGF [7]. I believe that it would be interesting to correlate VEGF plasma levels with the presence of vascular invasion and tumour type.

In conclusion, meticulous standardization of sampling is a mandatory step in studies on VEGF blood levels. The clinical value of serum VEGF determination in patients with testicular germ cell tumours could be increased allowing whole blood samples to clot for 2 h at room temperature before centrifugation.

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