

Evaluation of an innovative new method for quantitation of plasma cells on CD138 immunohistochemistry

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Aim: To compare the frequently used CD138 immunohistochemistry- based method of plasma cell quantitation, to a proposed new method, using interobserver and intraobserver concordance parameters.

Methods: Archival CD138 immunohistochemically stained slides made from paraffin- embedded **bone marrow** biopsies of 33 patients with a confirmed diagnosis of multiple myeloma were used. Light microscopic examination was performed using low magnification lenses (10×) for both the overview estimation method (method A) and the new method (method B), and high magnification lenses (50×), for method B only. For method B, reviewers selected three areas with low, intermediate and high plasma cell densities using 10× lenses. Using a well- defined technique, the 50× lens was then used to count plasma cells as a percentage of all nucleated cells. After blinded relabelling of all the slides, the nine reviewers repeated the plasma cell quantitation using both methods. The plasma cell counts were obtained, and the review times were recorded.

Results: Overall intraobserver concordance was comparable for method A (concordance correlation coefficient (CCC)=0.840) and method B (CCC=0.733). Interobserver concordance for method A (intraclass correlation coefficient (ICC)=0.793 and 0.713) and method B (ICC=0.657 and 0.658) indicated high similarity between reviewers. Method A showed poor interobserver concordance (ICC=0.105) at low plasma cell densities.

Conclusions: The new method is comparable to the frequently used overview estimation method in terms of intraobserver and interobserver concordance, and cost. The new method has superior interobserver concordance at low **plasma cell** densities. The new method appears more amenable to digital scanning and analysis.

Recent Publications:

1. Abdullah, I., Subramony, N., Musekwa, E., Nell, E., Alzanad, F., Chetty, C., Gantana, E., Lohlun, R., Cerfontein, W., Cochrane, B. and Chapanduka, Z., 2021. Indications and diagnostic value of bone marrow examination in HIV-positive individuals: A 3-year review at Tygerberg Hospital. Southern African Journal of Infectious Diseases, 36(1).

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Biography

Ethan Gantana graduated as a medical doctor (MBChB) from Stellenbosch University in 2015 and is currently a registrar in the division of [Haematological Pathology](#). He has a special interest in digital pathology. Ethan and Zivanai Chapanduka conceptualised and designed this study, participated in the experimental phase and wrote the draft protocol and manuscript. All the authors participated in the experimental phase of the study and review of the manuscript. Ethan coordinated all aspects of the conduct of the study.

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