Nuclear morphometry in prognostication of breast cancer in Saudi Arabian patients: comparison with European and African breast cancer.

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Abstract

BACKGROUND:

The role of nuclear morphometry as a prognostic factor in breast cancer is well documented. The aim of this study

was to evaluate this role in breast cancer in Saudi patients and to compare it with the experience in some African and

European studies.

PATIENTS AND METHODS:

Primary tumors from 135 patients were analyzed using an image overlay drawing system (Prodit Morphometry

Program), for the following nuclear features: area, perimeter, diameter, and roundness.

RESULTS:

The mean nuclear area (NA) was 93 microm(2) (range 45-168 microm(2)). The values of NA were higher in lymph

node-positive patients than lymph node-negative patients and in advanced stages than early cancer. NA was

significantly larger in patients with high grade tumor (p<0.0001) and in cases with tumor invasion (p<0.01). NA also

was significantly larger in recurrent cases (103 microm(2)) than in non-recurrent ones (91 microm(2)). In univariate

(Kaplan-Meier) analysis, NA was a significant predictor of disease-free survival (DFS) (log rank p<0.01), but not

disease-specific survival (DSS). In multivariate (Cox) survival analysis, NA lost its significance as an independent

predictor; response to treatment (p=0.0001) and tumor grade (p=0.030) being the only predictors of DFS. In a similar analysis for DSS, recurrence (p=0.040) and stage (p=0.003) were the only independent predictors.

CONCLUSION:

Nuclear morphometric profiles are helpful in identifying aggressive tumor phenotype (i.e. cases at risk for recurrence). The cut-off (93 mum(2)) of NA might be applied as quantitative criterion for Saudi female breast cancer to separate patients into good and poor prognosis groups. Mean NA of Saudi patients was markedly higher than the reported mean NA in the other studies and these differences might be due to technical variations or genetic bases