Abstract

Objective: The main issue in planning for breast cancer treatment is the identification of the subgroup of patients who are most likely to develop disease recurrence so that the appropriate therapeutic regimen can be provided. The Oncotype DX assay has been clinically proven to reliably predict disease recurrence and help prognostication, however, the Oncotype DX assay costs about 4,000 US dollars and most medical aids or health insurance schemes may not cover its cost. Surrogate assays such as the new Magee equations have been observed in some studies to predict the Oncotype DX Recurrence Scores. However, the accuracy of the new Magee equation remains a matter for debate. Thus, the objective of this study was to compare the recurrence scores of the Oncotype DX, and Magee equations generated Recurrence Scores in early breast cancer using available Oncotype DX and histopathological report database.

Method: The histopathological reports from Drs Gritzman & Thatcher Inc. Laboratories and Oncotype Dx Breast Cancer Assay reports conducted by Genomic Health (Redwood City, CA) were reviewed from the database. The histopathological and immunohistochemistry parameters were extracted from the pathology reports and the estimation of Recurrence Score was calculated using the new Magee equations. Following that, descriptive statistics were calculated for the sample, and statistical tests such as Spearman rank-order correlation coefficient and Wilcoxon matched pairs test were performed. Observed frequencies were calculated and summarised in a Two-way contingency table, and differences between the Oncotype DX and Magee Recurrence Scores were plotted on the Bland-Alman plot.

Result: The Magee Equation Recurrence Scores 1, 2 and 3 were observed to show a statistically significant relationship with the Oncotype DX RS. However, only Magee RS 1 showed a non-statistically significant difference with the Oncotype DX RS. Observed frequencies indicate that the Magee RS 1 and 2 may be able to rule out high Oncotype DX RS, and Magee RS 3

may be better at predicting low Oncotype DX RS. The Magee Recurrence Scores all showed a fair level of agreement with few discrepancies.

Conclusion: While the Magee equation shows a certain level of agreement with the Oncotype DX, it seemed to show significant discordance with the intermediate Oncotype DX by reclassifying most of the Intermediate Oncotype DX RS as low RS. The prognostication of the Oncotype DX provides patients with intermediate recurrence risk a chance to benefit from adjuvant chemotherapy thus the Oncotype DX may not be totally omitted, but clinical trials with the Oncotype DX and Magee equations is advised, in other to achieve a better outcome.

Keywords: Oncotype DX, Magee Equation, Breast cancer, Recurrence score.