Abstract

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Outcome based validation of Nottingham Prognostic Index in a Sri Lankan setting

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Nottingham prognostic index (NPI) is widely used to stratify breast cancer (BC) patients into prognostic groups; good (I=≤3.4), moderate (II=3.4-5.4) and poor (III=>5.4). Although it has been in use for many years it has not been validated **for a** Sri Lankan population.

This study was designed to validate the NPI based on breast cancer specific survival (BCSS) of a cohort of Sri Lankan **BC patients** and to determine the factors influencing BCSS of the subgroups.

All BC patients who had sought the services of our unit from 2006 to 2012 were enrolled. Histopathology data were collected retrospectively from laboratory records. Tumour grading and scoring of oestrogen receptors (ER), progesterone receptors (PR) and Her2 expression were done by a single investigator. NPI was calculated for all BCs. Patients were prospectively followed up at six month intervals which ended on 31st December 2013. Kaplan-Meier and Cox proportional hazards models were used for statistical analysis.

A total of 748 BC patients were included (**NPI groups I**-14.5%, II-52.5%, III-33%). Five year BCSS rates were **96.7%, 85.8% and 57% in NPI groups I, II and III respectively** (p<0.001). Univariate analysis revealed that Her2 over-expression influenced the BCSS of all three subgroups while PR expression affected the BCSS of subgroup II and III. ER expression **affected** only the BCSS of subgroup III.

Multivaraite analysis revealed that there was no single factor which independently affected the BCSS of NPI group I and III. Only the PR expression had an independent effect on the BCSS of NPI group II.

There is a significant survival difference between the three NPI subgroups where BCSS decreases with the increase in NPI value. The present study validates the use of NPI in prognostication of Sri Lankan BC patients. Expression of PR affects the survival of NPI group II independently. NPI group I and III appear more homogeneous than the group II.

Keywords: Breast cancer, Breast cancer specific survival, Nottingham Prognostic Index