Association between breast cancer (BC) protein truncating variants (PTV) and febrile neutropenia (FN) breast cancer patients (BCp) treated with taxane (TC) or anthracycline (AC) chemotherapy in Singapore

Seeu Si Ong1,2, Peh Joo Ho1,3, Alexis J. Khng1, Geok Hoon Lim4, Swee Ho Lim4, Samuel Guan Wei Ow5, Jinnie Siyan Pang6, Benita Kiat Tee Tan6,7, Ern Yu Tan6,8, Su-Ming Tan9, Veronique Kiat Mien Tan6,7, Fuh Yong Wong10, Jingmei Li1,2, Mikael Hartman2,3,11

1Women's Health and Genetics, Genome Institute of Singapore | 2Department of Surgery, National University of Singapore (NUS) | 3Saw Swee Hock School of Public Health, NUS | 4KK Breast Centre, KK Women's and Children's Hospital | 5Department of Haematology-Oncology, National University Cancer Institute | 6Department of Breast Surgery, Singapore General Hospital | 7Division of Surgical Oncology, National Cancer Centre Singapore (NCCS) | 8Department of General Surgery, Tan Tock Seng Hospital | 9Division of Breast Surgery, Changi General Hospital | 10Division of Radiation Oncology, NCCS | 11Department of Surgery, National University Health System

INTRODUCTION

PTV34: BC susceptibility genes5
ABRAXAS1, AKT1, ATM, BABAM2, BARD1, BRCA1, BRCA2, BRIP1, CDHT, CHEK2, EPCAM, FANC, FANCM, GEN1, MEND1, MSH2, MSH6, MUTYH, NBN, NF1, PALB2, PIK3CA, PMS2, PTEN, RAD50, RAD51C, RAD51D, REClQ, RINT1, STK11, TP53, XRC2
PTV9: Associated with stronger risk of BC susceptibility genes
MRE11, MSH2, MSH6, MUTYH, NBN, NF1, PALB2, PIK3CA, PMS2, PTEN, RAD50, RAD51C, RAD51D, REClQ, RINT1, STK11, TP53, XRC2

- cytotoxicity
- Results in FN
- FN Incidence
- AC 13.8%3
- TC / AC 25%4

Results in FN

PTV9 association with FN in BCp?

CONCLUSIONS

• FN has detrimental impact on patient treatment
• Accurate and reliable risk assessment for predisposition is key to reduce morbidity and mortality
• Genetics have an instrumental role in personalised therapeutics

1,155 BCp
• Median age at diagnosis = 52 years (IQR: 46 – 59)
• 9% carriers of at least one PTV.
• No single gene found to be significantly associated with FN

PTV association with FN from chemotherapy initiation to 30 days

Figure 1 (a-b). Bar plot of PTV genes association with (a) FN from chemotherapy initiation to 30 days from last chemotherapy treatment; (b) Neutropenia. Controls for all analyses were chemotherapy-treated breast cancer patients who did not develop neutropenia. Whiskers represent 95% confidence interval.

PATIENTS AND METHODS

PTV34: BC susceptibility genes5
ABRAXAS1, AKT1, ATM, BABAM2, BARD1, BRCA1, BRCA2, BRIP1, CDHT, CHEK2, EPCAM, FANC, FANCM, GEN1, MEND1, MSH2, MSH6, MUTYH, NBN, NF1, PALB2, PIK3CA, PMS2, PTEN, RAD50, RAD51C, RAD51D, REClQ, RINT1, STK11, TP53, XRC2
PTV9: Associated with stronger risk of BC susceptibility genes
MRE11, MSH2, MSH6, MUTYH, NBN, NF1, PALB2, PIK3CA, PMS2, PTEN, RAD50, RAD51C, RAD51D, REClQ, RINT1, STK11, TP53, XRC2

PTV association with FN from chemotherapy initiation to 30 days

Figure 1 (c). Bar plot of single gene association with FN from chemotherapy initiation to 30 days from last chemotherapy treatment. Analysis performed only for genes with carriers who did develop FN.

APTHERAPY

Results in FN

PTV association with FN

Figure 1 (a-b). Bar plot of PTV genes association with (a) FN from chemotherapy initiation to 30 days from last chemotherapy treatment; (b) Neutropenia. Controls for all analyses were chemotherapy-treated breast cancer patients who did not develop neutropenia. Whiskers represent 95% confidence interval.

• Analyses were adjusted for recruitment site, ethnicity, body mass index and population structure (first four principal components).

FURTHER INFORMATION

Author SGWO has consulting / advisory role with AstraZeneca, Eli Lilly, Novartis and Pfizer. All other authors have no conflicts of interest to declare. All co-authors have seen and agree with the contents of the poster.

E-mail address: Ong_Seeu_Si@GIS-a-star.edu.sg

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