

Peer Review File

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Comment 1: This is useful initial information for future research on the drivers of recurrence. Perhaps since this is preliminary information, the authors might wish to use language which is less definitive. For example, in page 2, lines 4-5, 'our research established a new predictive model on the bases of immune cell marker genes that can effectively predict relapse in TNBC patients.' could be worded differently to allow for further confirmatory or supporting data before making such a statement.

Reply 1: We really appreciate your advice. we have modified our text as advised (see Page 2, line 10-12).

Comment 2: Also, in Page 2, lines 2-3, it is not clear that HRD is the acronym for 'homologous recombination deficiency'. Perhaps the authors could state that more clearly.

Reply 2: We really appreciate your advice. we have modified our text as advised (see Page 2, line 7-8)

Comment 3: A few minor (not exhaustive, so authors please check) typing errors:

Page 1, line 26:...This is one component (as opposed to 'one of composition')

Page 2, line 19:...recurrence may act as as more important part...

Page 5, line 34:...patients were diagnosed with recurrence (as opposed to underwent recurrence)

Reply 3: We really appreciate your advice. we have modified our text as advised. (see Page 1, line 26; Page 2, line 26; Page 5, line 41)

Comment 4: I noticed that 98% of your patients underwent modified radical mastectomy or mastectomy with only 1% of patients having undergone BCS. There is data reporting that breast conservation treatment is associated with better survival when compared with mastectomy from the year 2007 onwards. (1-3) In women with TNBC, there is data to show poorer disease free survival with mastectomy. (4) How do the authors justify the disproportionate use of mastectomy and whether this has an impact on recurrence? Does the presence of the gene markers that the authors have reported supercede these clinical data?

References:

1. Martin MA, Meyricke R, O'Neill T, Roberts S. Breast-conserving surgery versus mastectomy for survival from breast cancer: the Western Australian Experience. *Ann Surg Oncol* 2007;14: 157-164.
2. Wang J, Wang S, Tang Y et al. Comparison of treatment outcomes with breast-conserving surgery plus radiotherapy versus mastectomy for patients with stage I

- breast cancer: a propensity score-matched analysis. *Clin Br Cancer* 2018;18:e975-84
3. de Boniface J, Frisell J, Bergkvist L, Andersson Y. Breast-conserving surgery followed by whole-breast irradiation offers survival benefits over mastectomy without irradiation. *Br J Surg* 2018;105:1607-1614
4. Wan S, Manuel L, Doolan M et al. Effect of clinical and treatment factors on survival outcomes of triple negative breast cancer patients. *Breast cancer: targets and therapy* 2020;12:27-35.

Reply 4: We really appreciate your advice. Although some studies have shown that breast-conserving surgery (BCS) has a higher overall survival (OS) and breast cancer-specific survival (BCSS), the proportion of patients with recurrence differs little from the data [1, 2] and, moreover, BCS requires a higher requirement for the primary tumor site, such as the need for a smaller tumor diameter, the proximity of the cancer to the breast periphery, and the need for radiotherapy after BCS. In addition, some studies have shown that mastectomy is now more widely used in Asia [3]. Therefore, in my opinion, the genetic markers we report are very much in line with the current clinical data.

References:

1. Kim, H., et al., *Survival of Breast-Conserving Surgery Plus Radiotherapy versus Total Mastectomy in Early Breast Cancer*. *Ann Surg Oncol*, 2021. **28**(9): p. 5039-5047.
2. Xiang, W., et al., *Survival Comparisons between Breast Conservation Surgery and Mastectomy Followed by Postoperative Radiotherapy in Stage I-III Breast Cancer Patients: Analysis of the Surveillance, Epidemiology, and End Results (Seer) Program Database*. *Curr Oncol*, 2022. **29**(8): p. 5731-5747.
3. Sinnadurai, S., et al., *Breast-conserving surgery versus mastectomy in young women with breast cancer in Asian settings*. *BJS Open*, 2019. **3**(1): p. 48-55.