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**The distribution of reproductive risk factors disclosed the heterogeneity of receptor-defined breast cancer subtypes among Tanzanian women**

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**Abstract**

Background

Recent epidemiological studies suggest that reproductive factors are associated with breast cancer (BC) molecular subtypes. However, these associations have not been thoroughly studied in the African populations. The present study aimed to investigate the prevalence of BC molecular subtypes and assess their association with reproductive factors in Tanzanian BC patients.

Methods

This hospital-based case-only cross-sectional study consisted of 263 histologically confirmed BC patients in Tanzania. Clinico-pathological data, socio-demographic characteristics, anthropometric measurements, and reproductive risk factors were examined using the Chi-square test and one-way ANOVA. The association among reproductive factors and BC molecular subtypes was analyzed using multinomial logistic regression. The heterogeneity of the associations was assessed using the Wald test.

Results

We found evident subtype heterogeneity for reproductive factors. We observed that post-menopausal status was more prevalent in luminal-A subtype, while compared to luminal-A subtype, luminal-B and HER-2 enriched subtypes were less likely to be found in post-menopausal women (OR: 0.21, 95%CI 0.10–0.41, *p* = 0.001; OR: 0.39, 95%CI 0.17–0.89, *p* = 0.026, respectively). Also, the luminal-B subtype was more likely to be diagnosed in patients aged ≤ 40 years than the luminal-A subtype (OR: 2.80, 95%CI 1.46–5.32, *p* = 0.002). Women who had their first full-term pregnancy at < 30 years were more likely to be of luminal-B (OR: 2.71, 95%CI 1.18–4.17, *p* = 0.018), and triple-negative (OR: 2.28, 95%CI 1.02–4.07, *p* = 0.044) subtypes relative to luminal-A subtype. Furthermore, we observed that breastfeeding might have reduced odds of developing luminal-A, luminal-B and triple-negative subtypes. Women who never breastfed were more likely to be diagnosed with luminal-B and triple-negative subtypes when compared to luminal-A subtype (OR: 0.46, 95%CI 0.22–0.95, *p* = 0.035; OR: 0.41, 95%CI 0.20–0.85, *p* = 0.017, respectively).

Conclusion

Our results are the first data reporting reproductive factors heterogeneity among BC molecular subtypes in Tanzania. Our findings suggest that breast-feeding may reduce the likelihood of developing luminal-A, luminal-B, and triple-negative subtypes. Meanwhile, the first full-term pregnancy after 30 years of age could increase the chance of developing luminal-A subtype, a highly prevalent subtype in Tanzania. More interventions to promote modifiable risk factors across multiple levels may most successfully reduce BC incidence in Africa.