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### Molecular Subtypes of Breast Cancer in a Tertiary Centre in Edo State: South-South Nigeria

*Sous-Types Moléculaires Du Cancer Du Sein Dans Un Centre Tertiaire Dans L'état D'edo : Sud-Sud Du Nigeria*

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#### ABSTRACT

**BACKGROUND:** Breast cancer constitutes a significant public health issue in most resource-constrained nations due to its high morbidity and mortality rates. There is a paucity of knowledge of the molecular subtypes of breast cancer in Nigeria primarily due to the lack of immunohistochemistry. This study aims to identify the molecular subtypes of histologically confirmed breast cancer cases at the University of Benin Teaching Hospital, Benin City, Nigeria, using ER, PR and HER2/neu as immunohistochemical biomarkers.

**MATERIALS AND METHOD:** Breast cancer specimens received in the Histopathology department of the University of Benin Teaching Hospital between 2019 and 2021 were used for this study. Representative sections of paraffin-embedded blocks were recut for histological typing, tumour grading, and immunohistochemistry.

**RESULTS:** A total of 330 cases were evaluated in this study. The average age was 49 years, with a M:F of 40.3:1. The most frequent histological type was invasive breast cancer (92.1%). Two hundred and forty-two (73.3%) cases were categorized as grade II tumours. The steroid hormone receptor positivity was 39.4%. Oestrogen and Progesterone receptor positivity were 39.4% and 22.1%, respectively. HER2/neu was positive in 16.4% of the cases. Triple-negative breast cancer (TNBC) was the most common molecular subtype, accounting for 49.4% of cases. Luminal A, Luminal B, and HER2/neu enriched subtypes were each found in 34.2%, 5.2%, and 11.2% of cases, respectively.

**CONCLUSION:** Triple-negative breast cancers predominated among the study population and were more common in high-grade tumours with unfavourable histological types and among women who were younger than their Caucasian counterparts.

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**KEYWORDS:** Molecular subtypes, Breast Cancer, South-south, Nigeria

#### RÉSUMÉ

**CONTEXTE:** Le cancer du sein constitue un problème de santé publique majeur dans la plupart des nations aux ressources limitées en raison de son taux élevé de morbidité et de mortalité. Il existe une pénurie de connaissances sur les sous-types moléculaires du cancer du sein au Nigeria, principalement en raison du manque d'immunohistochimie. Cette étude vise à identifier les sous-types moléculaires des cas de cancer du sein confirmés histologiquement à l'Hôpital Universitaire de Benin, Benin City, Nigeria, en utilisant les biomarqueurs immunohistochimiques ER, PR et HER2/neu.

**MATÉRIAUX ET MÉTHODE:** Les échantillons de cancer du sein reçus dans le département d'histopathologie de l'Hôpital Universitaire de Benin entre 2019 et 2021 ont été utilisés pour cette étude. Des sections représentatives de blocs inclus en paraffine ont été recoupées pour le typage histologique, le classement des tumeurs et l'immunohistochimie.

**RÉSULTATS:** Un total de 330 cas ont été évalués dans cette étude. L'âge moyen était de 49 ans, avec un rapport H de 40,3:1. Le type histologique le plus fréquent était le cancer du sein invasif (92,1 %). Deux cent quarante-deux (73,3 %) cas ont été classés comme des tumeurs de grade II. La positivité des récepteurs hormonaux stéroïdiens était de 39,4 %. Les récepteurs des œstrogènes et de la progestérone étaient positifs dans 39,4 % et 22,1 % des cas, respectivement. HER2/neu était positif dans 16,4 % des cas. Le cancer du sein triple négatif (CSTN) était le sous-type moléculaire le plus courant, représentant 49,4 % des cas. Les sous-types Luminal A, Luminal B et enrichi en HER2/neu ont été trouvés dans 34,2 %, 5,2 % et 11,2 % des cas, respectivement.

**CONCLUSION:** Les cancers du sein triple négatif prédominaient parmi la population étudiée et étaient plus fréquents dans les tumeurs de haut grade avec des types histologiques défavorables et chez les femmes plus jeunes que leurs homologues caucasiennes.

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**MOTS-CLÉS:** Sous-types moléculaires, Cancer du sein, Sud-Sud, Nigeria

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