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Programmed Cell Death Ligand 1 (PD-L1) Expression in Triple Negative Breast Cancer Cases in Benin City

Expression du Ligand 1 de la Mort Cellulaire Programmée (PD-L1) dans les Cas de Cancer du Sein Triple Négatif à Benin City

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ABSTRACT

BACKGROUND: Triple-negative breast cancers (TNBC) have been particularly challenging to manage due to their lack of intrinsic cellular receptors and a consequent lack of targetable therapy. Recently, the programmed cell death 1/programmed cell death ligand 1 (PD-1/PD-L1) immune checkpoint pathway has become the focus of immunotherapy in general, and especially for TNBCs. This study aimed to determine the pattern of expression of PD-L1 in TNBC cases in Benin City.

METHODS: Formalin-fixed, Paraffin-embedded tissue blocks of TNBC cases diagnosed in the Department of Anatomical Pathology, University of Benin Teaching Hospital, Benin City, Nigeria from 1st January, 2017 to 31st December, 2019 were re-sectioned for PD-L1 immunohistochemistry.

RESULT: Ninety-two cases of TNBCs were tested for PD-L1 expression. Thirteen (14.1%) of the TNBC cases were PD-L1 positive of varying degrees in tumour cells. Diffuse tumoural PD-L1 staining was seen in four (30.8%) of the PD-L1 positive cases. PD-L1 expression was significantly associated with increasing age up to the fifth decade ($p=0.030$). All the PD-L1 positive TNBCs were invasive breast carcinomas of no special type and mostly grade 2 tumours; however, there was no significant association between PD-L1 expression and histological subtype or grade.

CONCLUSION: PD-L1 expression was shown to occur at a relatively lower rate among TNBC cases in this southern region of Nigeria, and was significantly associated with increasing age. About 14.1% (1 in 7) of our TNBC patients could potentially benefit from immune checkpoint inhibitor therapy. We therefore recommend further PD-L1 immunohistochemistry assay for TNBC cases and the use of appropriate immune therapy when indicated.

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KEYWORDS: Breast carcinoma, Immune checkpoint, PD-L1, PD-L1 inhibitor, Triple-negative breast cancer

RÉSUMÉ

CONTEXTE: Les cancers du sein triple négatif (TNBC) sont particulièrement difficiles à gérer en raison de l'absence de récepteurs cellulaires intrinsèques et donc de thérapies ciblées. Récemment, la voie de point de contrôle immunitaire PD-1/PD-L1 (Programmed Cell Death 1/Programmed Cell Death Ligand 1) est devenue un axe majeur de l'immunothérapie en général, et en particulier pour les TNBC. Cette étude visait à déterminer le profil d'expression du PD-L1 dans les cas de TNBC à Benin City.

MÉTHODES : Des blocs de tissus fixés au formol et inclus en paraffine provenant de cas de TNBC diagnostiqués au Département de pathologie anatomique de l'Hôpital Universitaire de Benin City, Nigeria, entre le 1er janvier 2017 et le 31 décembre 2019 ont été réanalysés pour une immunohistochimie du PD-L1.

RÉSULTATS : Quarante-vingt-deux cas de TNBC ont été testés pour l'expression du PD-L1. Treize cas (14,1 %) ont montré une expression positive du PD-L1 à différents degrés dans les cellules tumorales. Une coloration tumorale diffuse du PD-L1 a été observée dans quatre cas (30,8 %) parmi les positifs. L'expression du PD-L1 était significativement associée à l'âge avancé, jusqu'à la cinquième décennie ($p = 0,030$). Tous les TNBC positifs pour PD-L1 étaient des carcinomes mammaires invasifs de type non spécifique, principalement de grade 2. Cependant, aucune association significative n'a été trouvée entre l'expression du PD-L1 et le sous-type histologique ou le grade tumoral.

CONCLUSION : L'expression du PD-L1 a été observée à un taux relativement faible parmi les cas de TNBC dans cette région sud du Nigeria, avec une association significative avec l'âge avancé. Environ 14,1 % (1 sur 7) de nos patients atteints de TNBC pourraient potentiellement bénéficier d'une thérapie inhibitrice de point de contrôle immunitaire. Nous recommandons donc une analyse immunohistochimique approfondie du PD-L1 dans les cas de TNBC et l'utilisation d'une immunothérapie appropriée lorsque cela est indiqué. WAJM 2024; 42 (2): 97-103

MOTS CLÉS : Carcinome mammaire, Point de contrôle immunitaire, PD-L1, inhibiteur de PD-L1, Cancer du sein triple négatif

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