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Identification and targeting of 'spheroid' forming cells in human malignant melanoma

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Metastatic malignant melanoma (MM) is a therapy resistant tumour with conventional chemotherapy having little or no impact on survival. The median 1-year and 5-year survivals are 41% and 5% respectively. There exist two classes of licensed biological drugs, B-Raf inhibitors and immune checkpoint inhibitors for those with inoperable diseases. However, there are issues of eligibility (only 50% of patients for B-Raf inhibitors, even then recurrence is inevitable), primary resistance or problem of toxicity (70-85% of patients fail to respond or cannot tolerate immune checkpoint inhibitors). Therefore, there is an unmet clinical need for new therapies in treating metastatic melanoma. Melanoma Cancer stem cells were shown to be responsible for the resistance of MM to therapies and were characterized using certain cell surface proteins (ABCB5, CD133, CD271 and CD20). Among these, CD20 is potentially targetable. We hypothesized that melanoma spheres facilitate hierarchical growth, including cancer stem cell markers and will recreate treatment responses. Seven (7) human melanoma cell lines were interrogated for sphere formation in 3D culture conditions and the expression of CD20 by flow Cytometric analysis. 6 of 7 cell lines formed spheres under non-adherent culture conditions, with reproducible sphere forming efficiency. 50% of them expressed the human CD20 antigen, in 1 to 15% of cells with demonstrable treatment response. Melanoma 'spheroids' are enriched with CD20 expressing cells and could be of therapeutic target in MM.

Biography

Abdullahi B Mukhtar had his Medical degree in Nigeria before acquiring MSc Clinical Dermatology (with Distinction) from Cardiff University. He is also a Diplomate in Dermatology, Royal College of Physicians and Surgeons, Glasgow. For several years, he was Head of one of the largest skin hospital in Nigeria, providing Clinical Care to patients as well as training health workers in the diagnosis and management of leprosy and common skin diseases to provide services at both primary and secondary health care levels. He is currently doing his PhD on Melanoma Cancer at European Cancer Stem Cells Institute, Cardiff University Funded by Commonwealth Scholarships Commission.

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