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POSTER PRESENTATION

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Initial characterization of drug resistant cancer stem cells isolated from primary brain tumors (astrocytoma) cell lines generated from Saudi patients

Ishaq Khan[1*], Mohammed Bangash[3], Saleh S Baeesa[3], Awatif Jamal[3], Hanadi Qashqari[2], Adel Abuzenadah[1], Mohammed H. AlQahtani[1], Ghazi Damanhouri[2], Hans-Juergen Schulten[1], Deema Hussein[2], Adeel Chaudhary[1]

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Background

The Cancer Stem Cells (CSCs) hypothesis proposes that malignant brain tumours are organized into aberrant cell hierarchies where a subset of parent CSCs replicate asymmetrically and unlimitedly to produce differentiated daughter cell [1,2]. These parent CSCs are highly adaptive and resistant to the chemotherapeutic drugs [3]. Developing new drugs that target CSCs requires a comprehensive understanding of the pharmacogenomics behavior of these cells [4,5]. Such understanding requires reliable *in vitro* and *in vivo* models that represent the beneficial patients. This project is set out to: i) Establish a collection of astrocytoma cell lines generated from Saudi patients, ii) Select drug resistant brain tumour CSCs, iii) Characterize drug resistant brain tumour CSCs individually, and iv) Deduce common features for drug resistant brain tumour CSCs.

Materials and methods

A range of methodologies will be applied including, tumour cell line derivation methods, the clonogenic selection assay, cytogenetics profiles, neuronal cancer stem cells characterisation assays and *in vivo* tumourgenic assays.

Results

Optimisation of methods used to establish astrocytoma cell lines generated from Saudi patients was completed.

To date two novel primary astrocytoma cell lines have been derived. Full clinical data related to the cell lines was retrieved. Currently, optimisation of the clonogenic selection assay and immunostaining for cancer stem cells markers are under progress.

Conclusions

Successful retrieval of primary astrocytoma cell lines was possible to accomplish. Important clinical information data relevant to the cell lines were obtained providing clear identification reference. Further work is required for the characterization of the drug resistant cancer stem cell component within these cell lines. Once completed, this research will assist in understanding some of the molecular mechanisms relevant to drug resistance, especially for patients in the Kingdom of Saudi Arabia.

Authors' details
[1]Center of Excellence in Genomic Medicine Research, King Abdulaziz University, Jeddah, KSA. [2]King Fahd Medical Research Centre, King Abdulaziz University, Jeddah, KSA. [3]Medical College, King Abdulaziz University, Jeddah, KSA.

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* Correspondence: ishaq_gene101@yahoo.com
[1]Center of Excellence in Genomic Medicine Research, King Abdulaziz University, Jeddah, KSA
Full list of author information is available at the end of the article

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