AB060. SOH22ABS060. Organoids from colorectal peritoneal metastases—towards personalised medicine

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Background: Approximately 8–13% of patients with colorectal cancer experience peritoneal metastases (PM) in either a synchronous or metachronous fashion. A quarter can be offered cytoreductive surgery with hyperthermic intraperitoneal chemotherapy, with a favourable survival of 30–40 months. The majority are therefore inoperable, rendering systemic chemotherapy as the mainstay of treatment. However, chemotherapy has poor efficacy, with treatment failures common. Patients are treated with generic chemotherapy regimens without any knowledge of each tumours sensitivity to a prescribed drug. Advances in preclinical modelling of disease in the form of organoids have led to real-time functional assessment of a tumour's sensitivity to a specific drug. Here, we aimed to establish and evaluate the feasibility of a novel organoid-based platform to integrate genomic and functional drug sensitivities to deliver personalised therapy to patients with treatment-refractory PM.

Methods: Operative biopsies from PM patients were used to grow organoids. Organoids were validated and sequenced for mutational aberrations, before undergoing throughput drug testing with over 50 FDA approved drugs.

Results: Organoids were established and screened against a combination of chemotherapeutics. Drug sensitivity in-vitro appeared to consistently mirror patient responses to the same drug *in-vivo*, confirming the validity of the platform. Novel therapies were detected in many patients with treatment refractory PM, when no genomic driven biomarkers were evident, underscoring the value of functional testing in providing diverse treatment options.

Conclusions: An organoid-based personalised medicine platform is feasible with promising early results.

Keywords: Personalised medicine; organoids; colorectal cancer; drug screening; peritoneal metastases (PM)

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Footnote

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Ethical Statement: The authors are accountable for all aspects of the work in ensuring that questions related to the accuracy or integrity of any part of the work are appropriately investigated and resolved.

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