

Cytology Is a Promising Tool for the Diagnosis of High-Grade Serous Ovarian Carcinoma from Ascites

Authors : Miceska Simona, Škof Erik, Frković Grazio Snježana, Jeričević Anja, Smrkolj Špela, Cvjetičanin Branko, Novaković Srdjan, Grčar Kuzmanov Biljana, Kloboves-Prevodnik Veronika

Abstract : Objectives: High-grade serous ovarian cancer (HGSOC) is characterized by the dissemination of the tumor cells (TC) in the peritoneal cavity forming malignant ascites at the time of diagnosis or recurrence. Still, cytology itself has been underutilized as a modality for the diagnosis of HGSOC from ascites, and histological examination from the tumor tissue is yet the only validated method used. The objective of this study was to evaluate the reliability of cytology in the diagnosis of HGSOC in relation to the histopathological examination. Methods: The study included 42 patients with histologically confirmed HGSOC, accompanied by malignant ascites. To confirm the malignancy of the TC in the ascites and to define their immunophenotype, immunohistochemical reaction (IHC) of the following antigens: Calretinin, MOC, WT1, PAX8, p53, p16 & Ki-67 was evaluated on ascites cytopins and tissue blocks. For complete cytological determination of HGSOC, BRCA 1/2 gene mutation was determined from ascites, tissue block, and blood. BRCA1/2 mutation from blood was performed to define the type of mutation, somatic vs germline. Results: Among 42 patients, the immunophenotype of HGSOC from ascites was confirmed in 36 cases (86%). For more profound analysis, the patients were divided in 3 groups regarding the number of TC present in the ascites: patients with less than 10% TC, 10% TC, and more than 10% TC. From all included patients, in the group with less than 10% TC, there were 10 cases, and only 5 of them (50%) showed HGSOC phenotype; 12 cases had equally 10% of TC, and 11 cases (92%) showed HGSOC phenotype; 20 cases had more than 10% TC and all of them (100%) confirmed the HGSOC immunophenotype from ascites. Only 33 patients were eligible for further BRCA1/2 analysis. Eleven BRCA1/2 mutations were detected from the tissue block: 6 germline and 5 somatic. In 2 cases with less than 10% TC, BRCA1/2 mutation was not detected; 4 cases had 10% TC, and 2 of them (50%) confirmed the mutation; 4 cases had more than 10% TC, and all showed 100% reliability with the tumor tissue. Conclusions: Cytology is a highly reliable method for determining the immunophenotype of HGSOC and BRCA1/2 mutation if more than 10% of tumor cells are present in the ascites. This may present an additional non-invasive clinical approach for fast and effective diagnose in the future, especially in inoperable conditions or relapses.

Keywords : cytology, ascites, high-grade serous ovarian cancer, immunophenotype, BRCA1/2

Conference Title : ICC 2022 : International Conference on Cytology

Conference Location : London, United Kingdom

Conference Dates : May 26-27, 2022