Mihaela Asp: Improving Molecular Diagnostics in Epithelial Ovarian Cancer to Optimize Individualized Treatment

Ovarian cancer remains the deadliest gynaecological cancer. Advances in treatment have created new opportunities to improve survival, particularly through targeted therapies such as PARP inhibitors. These treatments can benefit women whose tumours have BRCA mutations or other molecular changes associated with homologous recombination deficiency (HRD). Accurately identifying these characteristics is essential to ensure that patients receive the treatment most likely to benefit them.

Mihaela Asp is a Senior Consultant in Obstetrics and Gynaecology at the Department of Gynaecological Tumour Surgery at Lund University Hospital. She is also a researcher in Advanced Ovarian Cancer at Lund University and Skåne University Hospital, where her work focuses on improving the diagnosis and treatment of women with ovarian cancer. In addition to her clinical and research responsibilities, she teaches gynaecology and helps educate future doctors.

The project is being carried out by Alba Plana, a PhD student working within a research team under the supervision of several senior researchers, including Mihaela Asp. Together, the team aims to improve genetic and molecular diagnostics in advanced ovarian cancer, helping more women receive the right treatment from the start.

Reliable molecular testing is essential for identifying women who may benefit from targeted therapies such as PARP inhibitors. Tumours need to be analysed for BRCA mutations and homologous recombination deficiency (HRD), but obtaining reliable results before treatment can be challenging. Doctors often rely on small tumour samples collected using ultrasound-guided tru-cut biopsies. Although these samples are generally sufficient to establish a diagnosis, they may not contain enough suitable tumour tissue for successful HRD testing.

This is particularly problematic for women with advanced ovarian cancer, who often receive chemotherapy before surgery. If treatment effectively destroys tumour cells, there may be too little viable tissue left for molecular analysis. As a result, crucial information needed to guide treatment may be missing precisely when it is most needed.

Under Mihaela Asp’s supervision, Alba Plana has investigated why molecular testing fails and how its reliability can be improved. The research team has analysed data from more than 900 women diagnosed with ovarian cancer in southern Sweden between 2017 and 2024. They examined the availability and quality of BRCA and HRD test results, as well as the types of samples used for analysis.

In the next phase, the researchers will compare molecular test results from preoperative biopsies and surgical specimens from approximately 100 women with ovarian cancer. By examining factors such as the number of biopsy samples collected, the amount of viable tumour tissue and DNA quality, they aim to identify the factors that determine the reliability of molecular testing. The findings could help improve biopsy procedures and diagnostic

workflows, increasing the likelihood that women receive the molecular results needed to guide their treatment.

> *“For women with ovarian cancer, knowing more about their tumour can make a real difference to their treatment. I hope our research will help us identify more reliably which patients are likely to benefit from targeted therapies, so that we can offer each woman the treatment best suited to her.”*
>
> — **Mihaela Asp**

More reliable testing could have a direct impact on patient care. When molecular results are incomplete, doctors face difficult treatment decisions, and patients may miss opportunities for appropriate targeted therapy. Improving diagnostic accuracy would help identify more reliably those women likely to benefit from treatment, while reducing the risk of unnecessary side effects and toxicity.

Ultimately, this research aims to make molecular testing more reliable so that treatment decisions can be based on accurate and complete diagnostic information. By improving the success of genetic and molecular testing, Mihaela Asp and Alba Plana hope to support more individualised treatment, help more women benefit from targeted therapies and contribute to better outcomes and quality of life for women with ovarian cancer.