Endometrial cancer driver mutations detectable in uterine lavage fluid

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Mutations that have been linked to endometrial cancer can be found in the uterine lavage fluid of pre- and post-menopausal women both with and without detectable cancer, according to a study published in *PLOS Medicine* by John Martignetti from the Icahn School of Medicine at Mount Sinai, New York, USA, and colleagues.

There are no effective screening methods for endometrial cancer, which is currently increasing in both incidence and mortality in the United States. In the new study, researchers performed uterine lavage - where the inside of the uterus is rinsed with saline fluid to collect loose cells and DNA - on 107 women undergoing diagnostic hysteroscopy due to post-menopausal uterine bleeding or abnormal pelvic ultrasound results. The cells and DNA collected were analyzed with either one of two next-generation sequencing panels to detect previously established driver mutations of endometrial cancer. Hysteroscopy samples were analyzed using classic histopathology.

Of the 107 women in the study, 7 were found to have histopathological evidence of endometrial cancer and all 7, even those with only microscopic evidence of cancer, had significant cancer-driver gene mutations in their uterine lavage fluid. However, 51 women without histopathological evidence of cancer also carried cancer-driver mutations in the cells and DNA from their lavage fluid. Age and post-menopausal status were both positively associated with the likelihood of harboring these mutations. Due to this unexpected finding, uterine lavage fluid was not able to distinguish between women with and without clinically

relevant evidence of endometrial cancer. More research is needed to shed light on the significance of driver mutations in women without evidence of cancer.

"Given that a uterine lavage can be easily and quickly performed even outside of the operating room and in a physician's office-based setting, our findings suggest the future possibility of this approach for screening women for the earliest stages of endometrial cancer," the authors say. "However our findings suggest that further insight into development of endometrial cancer or its interruption are needed before translation to the clinic."

More information: Nair N, Camacho-Vanegas O, Rykunov D, Dashkoff M, Camacho SC, Schumacher CA, et al. (2016) Genomic Analysis of Uterine Lavage Fluid Detects Early Endometrial Cancers and Reveals a Prevalent Landscape of Driver Mutations in Women without Histopathologic Evidence of Cancer: A Prospective Cross-Sectional Study. *PLoS Med* 13(12): e1002206. DOI: 10.1371/journal.pmed.1002206