

Study could lead to 'liquid biopsy' tests for bladder cancer

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Findings from a Loyola University Medical Center study ultimately could lead to tests to screen for and diagnose bladder cancer.

Bladder cancer is the fourth most common non-skin cancer. But there is no good screening test for it, and there has been limited progress in characterizing how aggressive an individual's bladder cancer will be.

Loyola researchers studied microscopic droplets, called exosomes, that are shed by [cancer cells](#) and are found in urine. Understanding the biology of exosomes could lead to the development of a screening test, which would require a simple urine sample, said lead researcher Gopal Gupta, MD.

Exosomes derived from a urine sample also might help a physician determine how aggressive the cancer is. This, in turn, could better inform treatment decisions. The test would, in effect, serve as a "liquid biopsy," Gupta said.

The study by Gupta and colleagues is published in the peer-reviewed, open-access journal *BioMed Research International*.

Bladder cancer has been steadily increasing, with little progress in detection and risk stratification. Patients face significant risks of recurrence and progression. Thus, there's an urgent need to identify biomarkers of bladder cancer and the mechanisms by which bladder cancer progresses.

Exosomes are about 30 to 100 nanometers across. Exosomes contain proteins and the genetic material messenger RNA and micro RNA. RNA is a marker for genes that get expressed (turned on).

Exosomes are shed by cancer cells. In turn, they are taken up by neighboring cells or by other bladder cancer cells.

Researchers used a novel method called image cytometry to quantify how exosomes are taken up by cells. The study demonstrated how exosomes and their cargo can be transferred between cells. This supports the researchers' hypothesis that shedding of exosomes from bladder tumors plays a key role in the spread of the cancer.

Characterizing how exosomes are taken up and internalized by bladder cancer cells "could become invaluable for understanding the role of exosomes on [bladder cancer](#) recurrence and progression," the authors wrote.

More information: The study is titled "Characterization of Uptake and Internalization of Exosomes by Bladder Cancer Cells."

Provided by Loyola University Health System

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