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Korea designs non-invasive test as breakthrough in early diagnosis of bladder cancer

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A promising molecular diagnostic tool for detecting primary bladder cancer in patients who notice blood in their urine

Bladder cancer has a five-year survival rate of over 80% when detected early, but this rate declines significantly as the disease progresses to advanced stages. In a novel study, investigators from the Chungnam National University College of Medicine, South Korea report a promising new diagnostic tool that may pave the way for an important breakthrough in early diagnosis of bladder cancer in patients with blood in their urine (haematuria), reducing the number of potentially unnecessary invasive cystoscopies and alleviating the economic burden of the disease.

One of the most common symptoms of bladder cancer is haematuria, which accounts for up to 20% of all urological visits. Haematuria is seen in approximately 85% of bladder cancer patients. However, haematuria is prevalent among adults and may have other causes. From 5-20% of haematuria cases are diagnosed with bladder cancer.

Although the US FDA has approved several urine biomarker–based products, these methods have not been effectively utilised for early bladder cancer diagnosis. There are some in vitro molecular diagnostic techniques that measure genetic and epigenetic biomarkers for bladder cancer that are undergoing clinical trials, but they have yet to provide sufficient clinical evidence for the initial diagnosis of primary bladder cancer.

In this new study, the researchers have used a test based on a single biomarker, mePENK, to detect primary bladder cancer in haematuria patients, and compared its clinical performance with tests that combine multiple biomarkers. Surprisingly, their findings revealed that the mePENK test was equal to or even superior to these multiple biomarker tests. Furthermore, the noninvasive nature of using a urine sample and the simplified test procedure offer advantages such as a shorter turnaround time for sample processing and efficient and accurate analysis of results.

To implement the test in clinical practice, larger-scale prospective clinical trials are needed, and the researchers are actively pursuing that goal.