Screening and validation of molecular markers for muscle-invasive bladder urothelial carcinoma

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A group of molecular markers associated with muscle-invasive urothelial cancer of bladder were discovered

We designed experiment to screen and validate molecular markers associated with muscle-invasive urothelial bladder cancer by means of fully analyzing the whole-genome and transcriptome of bladder cancer. We obtained 5 DNA specific fragments among them, capable of distinguishing between muscle invasive and non-muscle invasive bladder cancer, whose accuracy rate can reach 90.8%. At the mRNA level, 4 genes were screened in invasive bladder cancer, which were significantly higher than that of non-invasive bladder cancer. At the miRNA level, we got two abnormal expression of miRNA associated with muscle invasive bladder cancer.

Introduction
Computed tomography (CT) and Magnetic resonance imaging (MRI) have limitations in distinguishing muscle invasive bladder cancer (MIBC) and non-muscle invasive bladder cancer (NMIBC). Accurate staging of bladder cancer is of great importance to therapeutic strategy.

Objective
To screen and validate molecular markers associated with muscle-invasive bladder cancer by means of fully analyzing the whole-genome and transcriptome of bladder cancer

Methods
Three aspects were carried out to analyze distinguished molecules, including DNA, mRNA and miRNA level.

DNA copy number variation pattern of bladder urothelial carcinoma samples in 65 patients (MIBC 36 and NMIBC 29 cases)

4 genes including AK098422、C13orf33、CYR61、RBMS3 showed significant difference between the two groups of MIBC and NMIBC in 30 patients and in the other 54 patients (p<0.05) using Realtime RT-PCR test

The miRNA expression chip of 45 cases of bladder cancer was completed, and 10 miRNAs were found. The accuracy of differentiating muscle invasive from non-muscle invasive was 86.7%, in which 2 abnormal expression of miRNA associated with MIBC were validated

Using the urine or tumor biopsy tissue samples to perform validation and application in Multi-center is expecting in the bladder urothelial carcinoma