

The biochemical value of urinary metalloproteinases 3 and 9 in diagnosis and prognosis of bladder cancer in Egypt

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Abstract

Background: Matrix metalloproteinases (MMPs) have long been associated with cancer-cell invasion and metastasis.

Few studies are available that describe this association with bladder cancer either related or unrelated to schistosoma infection.

Evaluating the urinary levels of MMP3 and MMP9 as diagnostic and prognostic biomarkers in different stages of

schistosomal and non schistosomal bladder cancer was the aim of the present study.

Urine samples were collected from 70 patients with schistosomal and non

schistosomal bladder cancer at early and

advanced stages and also from 12 healthy volunteers as controls. Urinary levels of

MMP-3 and MMP-9 was measured by

ELISA technique. Sensitivity and specificity of both markers were determined.

Results: Urinary levels of both MMP-3 and MMP-9 were significantly elevated in

all bladder cancer patients compared

with controls. MMP-3 started to elevate in early stages of schistosomal bladder

cancer (0.173 ng/ml) and non-schistosomal

bladder cancer patients (0.308 ng/ml) compared to control (0.016 ng/ml) and

remained elevated in advanced stages (0.166,

0.235 ng/ml) of both types of bladder cancer patients. In contrast, MMP-9 showed a

significant elevation in advanced

stages only of both schistosomal and non schistosomal bladder cancer patients

(10.33, 21.22 ng/ml) compared

to control (0.409 ng/ml) and this elevation of both markers was much higher in non

schistosomal bladder cancer.

Both Metalloproteinases were specific for the diagnosis of the disease but MMP-3

was more sensitive and this

sensitivity was evident in the early stage (84.85% for MMP3, 27.28% for MMP9).

Conclusions: MMP3 may be the recommended urinary metalloproteinases as early

diagnostic biomarker in the

early stages of both types of bladder cancer although both MMP9 and MMP3 can

be used in the diagnosis of

advanced stages. Further studies are required on large number of urine samples to

confirm these results.

Keywords: Bladder cancer, Schistosoma, MMP3,MMP

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