The value of preoperative hydronephrosis in prediction of extravesical and node positive disease in patients undergoing radical cystectomy for bladder cancer

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ABSTRACT

Preoperative hydronephrosis may be associated with a worse outcome in patients who undergo radical cystectomy for invasive bladder cancer. We analyze the prognostic significance of hydronephrosis, and its relationship to cancer stage and outcome.

We also evaluate concordance between the side of identifiable hydronephrosis and concomitant pelvic lymph node metastasis.

Material and Methods:

We analyze information from our prospectively collected database of patients who underwent radical cystectomy for invasive bladder cancer, at the urology department, Kasr El Aini hospital, Faculty of medicine, Cairo University.

A total of fifty patients with bladder cancer clinical stage 2, 3, 4 with or without hydronephrosis.

Result:

Of the studied cases, 19 (38)% had no hydronephrosis, while 31 (62)% had hydronephrosis. Unilateral hydronephrosis was found in 18\31 (58)% and bilateral hydronephrosis in 13/31 (42)%.

Of the eleven cases with node positive disease, 6/11 (54.5)% had bilateral pelvic node disease, right in 3/11(2703)% of cases, left in 2/11(18.2)%. Nine cases with hydronephrosis had concomitant node positive disease.

Conclusion:

Preoperative hydronephrosis is an independent predictor of extravesical disease, but not an independent indicator of node positive disease. This suggest that, preoperative hydronephrosis, is an indicator of advanced disease in form of extravesical extension, but not a nodal metastasis.

Key Words :

Hydronephrosis - bladder cancer .

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To

My parents

My wife

and My son Omar

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Introduction

Bladder cancer is the fourth most common cancer, accounting 6.6% of all cancers. It is nearly three times more common in males than in females (Jemal et al, 2009).

Males have higher 5 years survival rates than females (Jemal. et al 2009) .The incidence of bladder cancer increases with age.

Hydronephrosis in patients with bladder cancer is caused by tumor at ureteral oriffices, secondary ureteral tumor, intramural or extravesical tumor infiltration, or compression of the ureter. Radical cystectomy is the standard of care in patients diagnosed with muscle invasive bladder cancer (Dinny et al, 2006)

Predicting outcome and assessing the value of radical cystectomy in this population depends on accurate staging. Preoperative hydronephrosis may be associated with a worse outcome in patients who undergo radical cystectomy for invasive bladder cancer.

The treatment strategy for bladder cancer should achieve complete eradication of the loco-regional disease including the primary tumor and regional lymph nodes, treatment should also include occult regional nodes and visceral metastasis when the risk of this occurance is high enough using neoadjuvant or adjuvant chemotherapy.Patients should have volitional control of urination via the retained urethra or by a continent catheterizable stoma in properly selected patients (Esrig et al, 1996)

Radical cystectomy provides excellent local control of the primary tumor and should include in men the bladder, prostate, seminal vesicle,vas and in women the bladder, ovaries, uterus/cervix and anterior vagina. The rate of involvement of the uterus, cervix and ovaries are uncommon (Chang et al, 2002)

Preservation of the vagina and uterus provides better support for a neobladder and pelvic floor (Ali-El-Dein et al, 2002)

A bilateral standard pelvic lymphadenectomy including the external and internal iliac and obturator lymph nodes, an extended lymph nodes dissection that starts at the origin of the inferior mesenteric artery or the aortic bifurcation including the common iliac and presacral nodes, provides accurate staging and may increase the total lymph nodes count and improve survival, in patients with T3 or T4 tumor, the nodes proximal to the common iliac bifurcation are involved in up to one half of patients with node metastasis (Vazina et al, 2004)

Carcinoma in Situ involving the prostatic urethra, ducts or acini does not adversely affect the prognosis following cystectomy as the outcome is driven by the primary stage of bladder tumor (Esrig et al, 1996)

Prostatic stromal invasion occur via prostatic urethra (non contigious) or as direct invasion (contigious) from the primary bladder tumor via bladder neck or posteriorly via penetration of periprostatic tissue and/or seminal vesicle, some studies suggest that direct invasion from the primary tumor is associated with a worse prognosis compared to

invasion via non contigious involvement of prostatic urethra (Njinou et al, 2003)

In node negative patients or inadequate node dissection will likely miss node metastasis leading to under staging of the cancer, in node positive patients, the number of positive nodes has a direct impact on prognosis. A recent term of lymph nodes density has been introduced that reflects the number of positive nodes divided by the total number of nodes removed (Stein et al, 2003)

The pathologic stage also influence outcome in node positive patients, extranodal extension of cancer is a poor prognostic feature (Stein et al, 2003)

Aim of work

The purpose of this study is to compare the extravesical extension and node positive disease in patients undergoing radical cystectomy for bladder cancer with and without hydronephrosis.

EPIDEMIOLOGY

Bladder cancer is nearly three times more common in men than in women (Jemal et al, 2009). In men, it is the fourth most common cancer after prostate, lung, and colorectal cancer, accounting for 6.6% of all cancer cases (Jemal et al, 2005). In women it is the ninth most common cancer, accounting for 2.4% of all cancers (Jemal et al ,2009).

between 1985 and 2009, the number of bladder cancer diagnosed annually in the united states increased by over 50%, at a 25% faster rate in men than in women (Jemal et al, 2009)

Because bladder cancer has rarely been found incidentally at autopsy.And because the means by which it is diagnosed (cystoscopic inspection and biopsy) have remained constant since 1930s, one cannot attribute the increased incidence of bladder cancer to technologic innovation or changes in health care practice. Also, because bladder cancer incidence increases with age in both sexes, the greater rise in incidence in men than in women also seems contrary to what one would expect in view of longer female life expectancy. That the number of new cases has risen more in men remains particularly surprising because since 1960s women have worked outside the home and have change habits, exposing them to both industrial and environmental carcinogens (Jemal et al, 2009).

Bladder cancer is roughly two times as common among American white men as among African American men and is roughly one and one-half times more common among white American women than among African American women. It is estimated that a white male born in 1997

has a 3.7%chance of being diagnosed with bladder cancer over a lifetime, roughly three times the likelihood that a white female (1.2%) or African

American male (1.3%) has and more than four and one-half times the likelihood that an African American female (0.8%)has.

In last two decades, the rate of bladder cancer has been stable in men but has increased in women by 0.2% a year (Jemal et al, 2009).

Mortality sex and race:

Bladder cancer accounts for 3.0% of all cancer deaths in men and 1.5% in women.

Male have higher 5-years survival rates than women, with this difference in mortality being particularly significant in African American women (white male, 84%, African American males, 71%, white females, 76%, African American females, 51%). However blacks have a worse prognosis than whites (Jemal et al, 2009).

Factors that lead to a more advanced stage at diagnosis in African American women include a possible underreporting of superficial cancers, delayed diagnosis and/or more frequent occurrence of more aggressive variant of TCC in African Americans (Jemal et al, 2009).

Survival by stage at presentation is also more favorable for whites (Lynch and Cohen, 1995). This may reflect not only more advanced or

more aggressive disease, but also less adequate access to, or acceptance of, optimal therapies in African American population (Jemal et al, 2005).

Between the late 1950s and late 1990s the incidence of bladder cancer rose approximately 50%. It is to be anticipated with the aging of the United States population that this trend will continue. In comparison, there was a decrease in bladder cancer mortality rate during the same interval by approximately 33%, More males than females are expected to die from bladder cancer.

AGE

Bladder cancer can occur at any age. However, it is generally a disease of middle-aged and elderly people, with the median ages at diagnosis for urothelial carcinoma being 69 years in males and 71 years in females (Jemal et al, 2009).

The incidence of bladder cancer increases directly with age from roughly 142 per 100,000 men and 33 per 100,000 women age 65 to 69 years to 296 per 100,000 men and 74 per 100,000 women 85 years old or older.

Mortality from bladder cancer is also higher in elderly persons. For instance, the ratio of disease-related mortality to incidence for men and women in the United States age 65 to 69 years is 14% and 18% respectively, whereas for men and women age 80 and 84 years it is 30% and 37%, respectively (seer, 1997).