Title of presentation: Staging Bladder Cancer: Role of MRI

CLINICAL INTENSIVE COURSE: Oncologic Pelvic Imaging (Non-Gynecologic)

7 May 2012

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Syllabus

In this session, we will discuss the following:

1. Why is bladder cancer staging necessary?

2. How does staging affect the choice of treatments and outcomes in bladder cancer?

3. What non-imaging techniques are routinely used for bladder cancer staging?

4. What is the added value of imaging (in particular MRI) for staging bladder cancer?

5. What are the pearls and pitfalls for staging bladder cancer with MRI?

Brief summary:

Urothelial bladder cancer is the most common malignancy of the urinary tract. The highest incidence rates are found in Europe, North America and Northern Africa, however there is a 14-fold variation in its prevalence worldwide. The majority (75-85%) of patients present with tumors confined to the bladder mucosa (non-invasive papillary carcinoma or carcinoma in situ) or submucosa (pathology stage T1). The remaining 15-25% of patients present with tumors invading the muscular layer of the bladder and beyond (pathology stage ≥ T2). Prognosis is heavily dependent on pathology grade and stage. Low-grade non muscle-invasive cancers have the most favorable oncologic outcomes, with < 1% risk of progression at 5 years. Muscle-invasive tumors, particularly those with coexisting lymph node metastases, are associated with dramatically worse survival. Furthermore, patients with perivesical (pathology stage T3) and
adjacent organ (pathology stage T4) invasion have significantly higher probability of recurrence compared with those with organ-confined bladder cancers. This wide variability in outcomes renders adequate staging of bladder cancer of paramount importance, in order to aid the selection of low-risk patients who could be managed conservatively with endoscopic resection and intravesical chemotherapy or immunotherapy; and identify those with more extensive disease who would benefit from more aggressive treatment with radical cystectomy and/or systemic chemotherapy.

The management of bladder cancer is based on findings from cystoscopic evaluation. Although it is an invasive procedure that may result in patient discomfort, infections and (rarely) strictures, cystoscopy-guided biopsies and tumor resections are used to establish tumor histology, grade and depth of bladder wall invasion. Biopsies, however, cannot provide information on other important prognostic factors such as extravesical tumor extension and presence of nodal or distant metastases, a role traditionally bestowed upon imaging. Several different modalities have been used for this purpose, including fluoroscopic techniques (e.g. antegrade or retrograde cystography), computed tomography (CT) alone or in combination with positron emission tomography (PET) and MRI. In this session, we will discuss the MRI technique used for bladder cancer staging, as well as pearls and pitfalls for interpretation.