

SYSTEMATIC REVIEW OF UROLOGICAL FOLLOW UP AFTER SPINAL CORD INJURY

Hypothesis / aims of study

Although it is well recognized that patients with neurogenic bladder dysfunction after spinal cord injury (SCI) are at increased risk for renal deterioration(1), bladder cancer(2), urinary tract stones(1), infections(3) and other significant urologic complications, there is very little consensus about how these patients should be monitored over time to detect or prevent these urological complications. Our objective is to perform a systematic review of the literature to evaluate the available evidence supporting the various methods of screening for neurogenic bladder complications.

Study design, materials and methods

This systematic review included peer-reviewed studies published from 1960 to 2010 which included adults and children with traumatic SCI. The intervention was surveillance with specific types of urologic diagnostic/screening tests. The outcomes were development of kidney and bladder stones, bladder cancer, urinary tract infection (UTI), renal failure, vesicoureteric reflux, and hydronephrosis. For the initial database search all study types and study design types were included. Abstracts from the 340 articles found in the database search were reviewed by three trained reviewers at the University of Washington Model Systems Knowledge Translation Center (MSKTC). Discrepancies were resolved by consensus of the reviewers and 52 articles were included in the analysis. Three MSKTC reviewers independently extracted data from the articles. Articles were excluded if the detailed full review revealed that they did not meet the initial criteria. Authors rated evidence using American Academy of Neurology 2004 Guidelines.

Results

At the end of this full review 38 of the 52 articles met the final criteria, and an additional 16 articles were added from the bibliography search for total of 54 articles.

Interpretation of results

Bladder cancer

There were nine articles that evaluated screening for bladder cancer (one level II, six level III and two level IV). There is insufficient evidence to make recommendations regarding the use of urine survivin, BTA-stat or BLCA-4 and urine cytology was only 46% sensitive at predicting bladder cancer. Two level III articles suggest that annual cystoscopy and biopsy do not fit criteria for a screening test.

Urinary tract infections

There were 12 articles (five level I, one level II, five level III, and one level IV) that evaluated urinary tract infection screening. One study indicated a correlation between pyuria and bacteriuria, but only for gram negative bacteria and the absence of pyuria does predict the absence of bacteriuria. Patient reported symptoms used to predict UTI yielded mixed results. Dipstick testing of urine probably has the same accuracy as microscopy but its ability to predict UTI yielded mixed results. Routine urine cultures are likely unnecessary in healthy asymptomatic individuals with normal urinalysis.

Urodynamics in screening

There were two level II and four level III articles evaluating the utility of urodynamics (UDS) in screening. All support the use of periodic UDS, but an optimum frequency of such testing could not be determined from the data. The majority of studies suggest that poor bladder compliance, high bladder storage pressures and detrusor sphincter dyssynergia detected on UDS lead to upper tract deterioration.

Upper tract abnormalities

There is sufficient evidence (one level I, seven level II, one level III studies) to recommend renal ultrasound as a sensitive, useful, non invasive method for routine follow up for detecting upper urinary tract abnormalities. Two studies (one level II, one level III) suggest that ultrasound is cost effective only if it is used in those with urinary symptoms. Five articles (one level I, four level II) evaluated radioisotope renography with the evidence being sufficient to recommend it as a good method for further testing, especially if the ultrasound is positive. One study (level II) showed that serum creatinine was not sensitive to detect early deterioration of renal function. However, another study (level II) showed that creatinine clearance is a dependable measure for renal function in people with SCI

Urinary tract stones

Ultrasound had good sensitivity for urinary tract stones in five articles (two level I, two level II, one level III) with enough evidence to recommend it as a screening method. Other tests that are useful to detect stones, but entail use of intravenous contrast and radiation include excretory urography (one level I and two level II) and CT of the abdomen and pelvis (one level I). Two articles (level II) have confirmed that the KUB is not reliable to assess for urinary tract stones.

Concluding message

Based on this review no definitive recommendations for screening can be made except for routine renal ultrasonography. UDS is an important part of screening, but the frequency is unclear and the optimum bladder cancer screening has not been defined.

References

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