

Local Anesthesia during Transrectal Prostate Biopsy

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ABSTRACT

Objectives: To determine the effectiveness of the longer acting agent bupivacaine for periprostatic anesthesia during transrectal ultrasound (TRUS) - guided prostate biopsy.

Patients and Methods: Seventy-five patients were randomized to receive an injection with bupivacaine, a lidocaine/bupivacaine combination, or no local anesthesia. 5 ml of anesthetic was injected immediately before biopsy. After performing the biopsy, a visual analogue scale (VAS; 0-10) were given to patients to assess the severity of pain during the biopsy procedure.

Results: In the bupivacaine group, the mean VAS scores were 2.04, and 4.46 in the control group with no local anesthesia ($p < 0.001$).

Conclusion: bupivacaine provides immediate and significant periprostatic anesthesia for TRUS prostate biopsy.

Keywords: prostate, biopsy, pain, anesthesia, local, trus.

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INTRODUCTION

Transrectal prostate biopsy is considered the best method for prostate cancer, serving as indicative for staging as well⁵. Prostate biopsy is considered a minor procedure that is tolerated by most of patients and it is commonly performed as an office procedure with no anesthesia or with rectal application of lidocaine gel. However in a previous study we have observed that prostate biopsy is perceived as painful by 96% of patients and 20% considered the pain severe². 20% of patients claim that they would refuse a rebiopsy with no general anesthesia³.

Conflicting results have been reported regarding the effectiveness of intrarectal application of lidocaine gel. Antunes et al claim that Lidocaine gel probably exerts a minimal effect on patient's tolerance to pain on transrectal prostate biopsy⁵. In this study we examined the effectiveness of bupivacaine in providing periprostatic anesthesia for TRUS prostatic biopsy.

PATIENTS AND METHODS

During the period from November 2004 till April 2005, 75 males were randomized to receive periprostatic bupivacaine (0.25%), a 1% lidocaine/bupivacaine combination, or no local anesthesia.

Using 22G spinal needle and patients in left lateral decubitus position, a 5 ml of anesthetic was injected into the hyperechoic notch (Fig 2), between the prostate and seminal vesicle bilaterally. 10 biopsies were obtained using spring-loaded biopsy needle.

After the biopsy, patients were asked to report a score, using a validated linear visual analogue scale (VAS). With 0 denoting no pain and 10 describing the worst pain the patient had ever experienced. This score was immediately obtained after the procedure.

RESULTS

In these three groups, the mean VAS scores are shown in table. bupivacaine ($P < 0.001$) and the lidocaine/bupivacaine combination ($P = 0.002$) provided significantly better pain control than in the control group.

Pain control provided by bupivacaine and lidocaine/bupivacaine combination was not significantly different.

Group	N	Mean VAS score	P vs. none
Bupivacaine	24	2.04(2.24)	<0.001
Lido./Bupiv.	23	2.00 (1.48)	0.002
None	28	4.66 (2.78)	

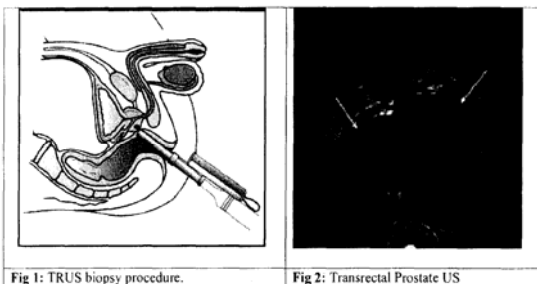
Table 1: Pain score and pair wise comparisons.

DISCUSSION

TRUS-guided prostate biopsy is the mainstay of diagnosis of early carcinoma¹. A significant amount of patients who undergo TRUS guided prostate biopsy consider the procedure uncomfortable⁵. Moderate to severe pain is usually experienced during and after this procedure. Pain associated with this procedure occurs predominantly when the needle penetrates the prostate capsule into the stroma⁵. This pain is usually present for a few days.

Several types of anesthesia have been suggested to decrease pain and discomfort concomitant with this procedure². These types include intrarectal lidocaine gel, Lidocaine injection and combined Lidocaine/bupivacaine injection.

In our study we use bupivacaine and Lidocaine/bupivacaine combination. According to Desgrandchamps et al, rectal administration of lidocaine gel has no impact on the tolerance to prostate biopsy³. Libovici et al claim that Lidocaine is an affective method for prostate biopsy⁴.



CONCLUSION

Bupivacaine provides immediate and significant periprostatic anesthesia for TRUS biopsy.

The value Of Tc99m-Pertechnitate Testicular Scintigraphy In Diagnosis Of Acute Testicular Torsion In Pediatric And Adult Patients

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ABSTRACT

Objective: of this study to evaluate the accuracy of Tc99m-Pertechnitate Testicular Scintigraphy (T.S) in evaluating patients with acute scrotal swelling and suspected testicular torsion in pediatric and adult patients ,by statistical analysis of the results and considering the effect of patients age factor in this regard.

Methods: Seventy five patients (age range 5 to 38 years) with possible acute testicular torsion from July 2000 to July 2003 were enrolled in this study. T.S was performed for all patients. All of the patients with clinically suspected acute testicular torsion underwent surgery. The surgical findings were reviewed and definite diagnoses were established. None of the other patients had surgery and were followed clinically for at least 3 month after and radionuclide imaging.

Results: Seventy Five patients were included in the study , divided into (17 with testicular torsion 58 with non torsion) according to T.S results. with one false positive and no false negative. Overall, T.S has sensitivity of 100% and a specificity of 97% in identifying a testicular torsion. 7 out of 17 patients with testicular torsion had a salvageable testicle at the time of surgery.

Conclusion: Tc99m scintigraphy is a reliable method for diagnosis of testicular torsion sensitivity and specificity are 100 % and 98 % . There was no significant statistical difference in the sensitivity between pediatric(< 15 years) and adult age groups(> 15 years).

Key words: Tc99m-Pertechnitate, Scintigraphy , Testicular torsion

INTRODUCTION

Although usually not life-threatening, scrotal pain, swelling, or a mass presenting to the emergency department (ED) should be considered a potential surgical emergency until the

etiology is determined. Although most etiologies of acute scrotal swelling are nonemergent, some presentations may result in the rapid loss of a testis if not diagnosed and managed in a timely manner. The most common etiologies of scrotal swelling in the pediatric patient are epididymitis, testicular torsion, and torsion of appendix testis(1). Differentiating these disease processes can sometimes be problematic. The clinical presentation of torsion of the testes, torsion of the testicular appendages, testicular tumor and inflammatory disease may overlap and diagnosis can be difficult(2). Treatment options (emergency surgery, antibiotics, observation) differ dramatically depending on the disease process. The purposes of this study were to determine the reliability Tc99m Pertechnetate Testicular Scintigraphy (T.S) in diagnosing testicular torsion.

PATIENTS AND METHODS

This study was performed at King Hussein Medical Center, from July 2000 to July 2003. We studied 75 patients with a mean age of 13 years (range 5-38). They presented with acute scrotal swelling.

T.S was performed to all patients using G.E Millenium Dual head Gamma camera . Dynamic study was performed immediately after injection of Tc99m pertechnetate with doses according to body weight (from 5- 15 mci) . 2 seconds per frame was taken for one minute , followed by 3 minutes per frame for the next 30 minutes. Reading and agreement on testicular scans results where performed by two Nuclear Medicine physicians.

RESULTS

Table 1 shows the number of patients who underwent T.S .17 patients out of the 75 patients(23%) who underwent T.S had where reported as testicular torsion by demonstrating reduced flow and photopenic defect within the affected side of scrotum (Fig 1), there were no false-negatives and one false-positive. Overall, T.S sensitivity of 100% and a specificity of 98% in identifying a testicular torsion.11 Out of 16 patients with testicular torsion was presented after 12 hours, and scans demonstrated rim with increased tracer uptake around the photopenic defect of testes which is characteristic sign of missed testicular torsion. 7 out of 16 patients

with testicular torsion identified by T.S presented within 12 hours of the onset of their symptoms and had a viable testicle at the time of surgery. 12 cases (75%) of testicular torsion was in patients below the age of 15 years and the remainder 4 (25 %) in patients above the age of 15 years. There was no significant difference between the sensitivity of this test in pediatric and adult age groups .The only false positive case was found in 25 year old man and was due to hydrocele

True ositive		True negative		False Positive		False Negative	
16		59		1		0	
NO.	Age	NO.	Age	NO.	Age	NO.	Age
4	>15y	20	>15y	1	>15y	0	>15y
12	<15y	39	<15y	0	<15y	0	<15y
Total : 75							

Table 1: Results of Tc99m testicular scan in 75 patients and there age distribution



Figure 2: Testicular scan shows increased flow to the left

Discussion

It is generally agreed that any male suspected of having a testicular torsion requires immediate surgical exploration. However, differentiating testicular torsion from epididymitis or torsion of appendix testis can be problematic. Furthermore, if all patients presenting with an acute swollen

scrotum underwent emergent surgical exploration, a significant number of unnecessary surgical procedures would be performed with attendant costs and morbidity. Numerous textbooks and articles have cited that testicular torsion is the most common diagnosis in the prepubertal male with acute scrotal swelling (3,4). Lewis et al(1) performed a retrospective review of 238 cases of acute scrotal pain encountered in a children's hospital ED. They found incidences of testicular torsion, of 16%. Kass et al(5) studied 77 consecutive children from 1 day to 17 years of age evaluated for scrotal pain and swelling; 21 (27%) patients had a testicular torsion. In our study, testicular torsion was in (21% of patients) representing slightly lower than reported which can be explained by the adult age range which is covered in our study and have lower incidence of testicular torsion.

T.S can play an important part in excluding testicular torsion in questionable cases. The clinical presentation of torsion of the testes, torsion of the testicular appendages, testicular tumor and inflammatory disease may overlap and diagnosis can be difficult. ^{99m}Tc pertechnetate is injected into a peripheral vein as a bolus with the patient in the supine position.(6) Testicular perfusion can be assessed immediately both by evaluation of flow to the testicles on dynamic images and by assessment of the static images. The non-perfused testicle of acute torsion (Fig 1) can be differentiated from the hyperemic tissue seen in epididymo-orchitis (Fig 2) and other inflammatory conditions. In our study T.S sensitivity and specificity are 100 % and 98 % respectively. Some studies found Scintigraphy has a sensitivity of 96% and a specificity of 98% with an overall accuracy of 96% as compared with clinical evaluation, which has 66% sensitivity, 96% specificity and 88% accuracy(7) Neither power Doppler ultrasound nor color Doppler has proved to be more useful than scintigraphy in diagnosing torsion. Because of its greater specificity (98% versus 77%), scintigraphy may help prevent unnecessary surgery when color Doppler ultrasound shows equivocal flow(8). In our study there was no statistical difference in the sensitivity of T.S for pediatric (< 15 years) and older patients (>

15 years) compared to Doppler U.S in which normal prepubertal testes are a source of false-negative flow results Ingram and Hollman(9) noted that 38% of normal boys aged 10 weeks to 13 years had no flow detectable with color Doppler US. Therefore, the exclusive use of color Doppler sonography in the evaluation of testicular torsion is not recommended in prepubertal patients where radionuclide scintigraphy remains the imaging modality of choice(10,11). Delayed or missed torsion (more than 24 hour's history) may demonstrate a hyperemic rim on scintigraphy identical to that seen in a scrotal abscess, therefore interpretation in conjunction with the clinical findings is essential. The only false positive result for testicular torsion in our study was found to be induced by scrotal hydrocele. Other scrotal masses like in tumors, haematoma and abscesses may give rise to photopenic defects. Knowledge of patient history, physical examination and ultrasound findings may help to differentiate these conditions from torsion(12).

CONCLUSION

Tc99m scintigraphy is a reliable highly sensitive and specific method for diagnosis of testicular torsion in pediatric and adult patients with no significant influence of patient age over the sensitivity of the test.

Scrotal masses (Hydrocele , hematoma , abscess ...etc) are the major causes of false positive results in T.S , therefore knowledge of patient history, physical examination and ultrasound findings may help to differentiate these conditions from torsion.

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