

## COMPARISON OF PAIN CONTROL DURING TRUS GUIDED BIOPSIES BETWEEN BASAL PERI-PROSTATIC LOCAL INFILTRATION ANESTHESIA VERSUS COMBINED TOPICAL ANAL LIGNOCAINE OINTMENT AND LOCAL INFILTRATION ANESTHESIA

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### Abstract

Control of pain associated with TRUS guided biopsies was the target of many researches that tried peri-prostatic local infiltration anesthesia (PLIA) either basal, apical, combined or topical anesthesia (TA). Thus, the efficacy of (PLIA) alone versus (PLIA) combined with (TA) in pain control during TRUS guided biopsies was compared.

A total of 163 patients with a mean age $\pm$ 2stdev (61 $\pm$ 1.4 years) and a mean PSA  $\pm$  2stdev (8.5 $\pm$ 1.1ng/ml) 84 patients (G1) were randomized to receive either PLIA alone (G1) or 79 patients (G2) combined TA (using lignocaine 5% ointment of the anal ring, anal canal, and anterior rectal wall and basal PLIA via injecting 5 ml 2% xylocaine in both sides of the base), with cross-matched mean ages. Patients were asked to scale pain from 0-10 during probe insertion (P1), periprostatic infiltration (P2) and after taking biopsies in all patients (P3) using the visual analogue pain scale to complete a visual analogue scale questionnaire.

The patients in G2 showed significantly less pain scores at all stages of the procedure (P1, P2 & P3) in comparison to patients in G1 especially regarding P1 and P2. The mean reported pain score was 24, 4 $\pm$ 5, 6 and 15, 8 $\pm$ 3.8 for G1 & G2 respectively, with significant difference (p=0,022).

**Key words:** Patients, Transrectal ultrasonography, a prospective randomized study

### Introduction

Transrectal ultrasonography (TRUS) guided biopsies is an essential tool for the diagnosis of prostate cancer and differential diagnosis of prostatic diseases since it was introduced become the standard method used to diagnose prostatic carcinoma (Torp-Pedersen *et al*, 1989). Although, it could be tolerated by some patients, most of the patients need some form of anesthesia to make it more tolerable, but 60-80% of patients experienced mild to moderate pain during the procedure (Collins *et al*, 1993).

Making TRUS guided biopsies a less painful more tolerable procedure was the goal of many researches since the introduction of that technique (Jindal *et al*, 2014). Sedation was recommended (Peters *et al*, 2001), as intrarectal lidocaine gel (Issa *et al*, 2000) or periprostatic nerve block (either bilateral seminal vesicleprostatic angle nerve block (Nash *et al*, 1996; Soloway and Obek, 2000;

Pareek *et al*, 2001; Leibovici *et al*, 2002) or apex injection (Taverna *et al*, 2002; Seymour *et al*, 2001). There is controversy regarding what is the best method for pain relieving. Some report that rectal administration of lidocaine gel has no impact on pain tolerance (Desgrandchamps *et al*, 1999), while others report that lidocaine lateral to the seminal vesicles before prostate biopsy doesn't diminish biopsy-associated pain (Wu *et al*, 2001).

This study was designed a prospective randomized study comparing 2 different techniques for relieving pain associated with TRUS guided biopsies.

### Subjects, Materials and Methods

For over a year, a total of 163 consecutive patients indicated for TRUS and biopsies for suspected prostate cancer. *Inclusion criteria:* 1-PSA > 4 ng/ml, 2- Suspicious digital rectal exam (DRE), and 3- Or both. Exclusion cri-

teria: 1-Lidocaine allergy. 2- Hemorrhagic diathesis, anticoagulation therapy, and 3- Chronic pain syndrome.

Mean age  $\pm$  2stdev of the patients was (61 $\pm$ 1.4 years) and mean PSA  $\pm$  2stdev was (8.5 $\pm$ 1.1 ng/ml). Patients were randomized to receive either PLIA (84 patients) alone (group 1) or combined TA using lignocaine 5% ointment of the anal ring, anal canal, and anterior rectal wall and basal PLIA via injecting 5 ml 2% xylocaine in both sides of the base (79 patients, group 2). Mean age and PSA did not differ significantly between the 2 groups. Patients in Group 1 had a mean age of 62.5 years (range, 52–88 years) whereas those in Group 2 had a mean age of 60.2 years (range, 50–86 years). All patients had PSA levels above 4 ng/ml. Technique was done by the same team using the same ultrasound machine (Toshiba....) and patients were asked to scale their pain from 0-10 during probe insertion (P1), periprostatic infiltration (P2), and after biopsy, 10 biopsies in all patients, (P3), using the visual analogue pain scale to complete a visual ana-

logue scale questionnaire (Fig.1). The patients in G1 had 10 systemic core biopsies taken, five from the right and five from the left lobes of the prostate gland. In G2, all patients except 6 had 10 systematic biopsies.

## Results

The patients in G2 showed significantly less pain scores at all stages of the procedure (P1, P2 & P3) in comparison to patients in G1 especially regarding P1 & P2. The mean pain score was 24, 4 $\pm$ 5, statistically significant (p=0,005). Pain score was divided into 0 = no pain, 1-3 = mild pain, 4-6 = moderate pain and 7-10 = severe pain (Fig. 1).

No pain was experienced on probe insertion (P1) by 33% of the patients in G 2 as compared to 15 % in G1. Mild pain and moderate pain was experienced by 47% & 20% of patients, respectively, in G2; in G1, 35 % experienced mild pain and a much higher percentage of 42% experienced moderate pain. No patient recorded severe pain on probe insertion in G2 as compared to 10% in G1 (Tab. 1, Fig.3).

Table 1: details of pain levels during study

	G1				G2			
	No p severe	mild	mod.		No p Severe	mild	mod.	
<b>P1</b>	12p 15%	27p 35%	35p 42%	9p 10%	26p 33%	37p 47%	16p 20%	0
<b>P2</b>	0p	31p 37%	41p 49%	12p 14%	53p 67%	22p 28%	4p 5%	0
<b>P3</b>	1p 1.2%	6p 7%	31p 37%	34p 41%	10p 13%	37p 46%	20p 33%	6p 8%

P= patients, P1=probe insertion, P2= infiltration anesthesia and P3= biopsy

Table 2: Comparison between different studies.

References	Patient No.	Topical anesthesia pain score	Infiltration anesthesia pain score	Significance P value
Wu <i>et al.</i> [2001]*	40	1.6	1.2	0.77
Seymour <i>et al.</i> (2001)	157	1.95	1.53	0.001
Leibovici <i>et al.</i> (2002)	90	4.15	3.06	0.04
Issa <i>et al.</i> (2000)	50	5	2	0.00001
Alejandro and Colin (2012)	96	2.76	1.73	0.001

\*This study showed no significant difference between the 2 groups.

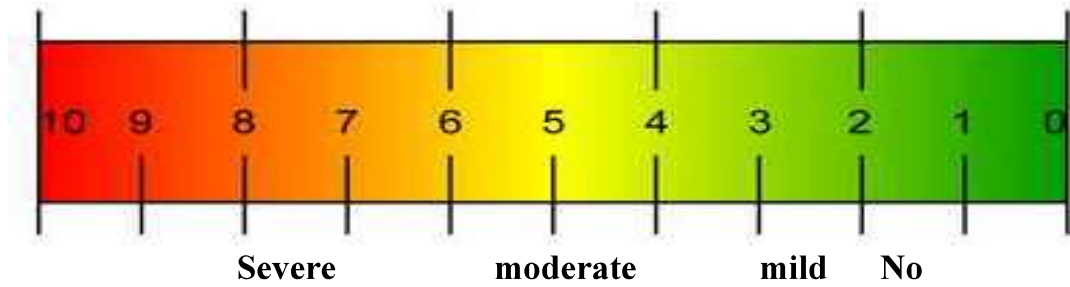


Fig. 1: Visual analogue pain scale

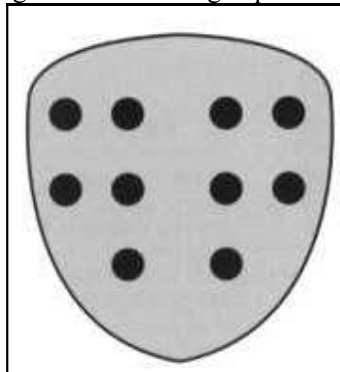


Fig. 2 Technique of 10 systematic biopsies

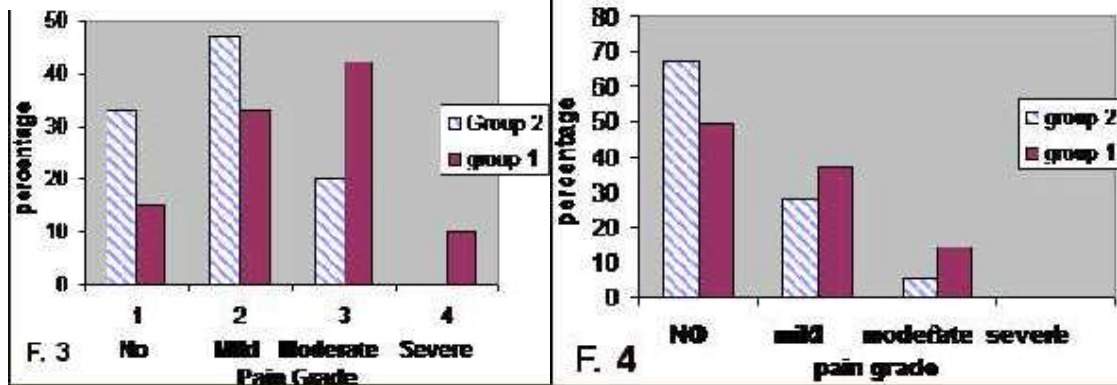


Fig. 3: Difference in pain degree upon probe insertion (P1) between groups

Fig. 4: Difference in pain degree upon periprostatic infiltration anesthesia (P2) between groups.

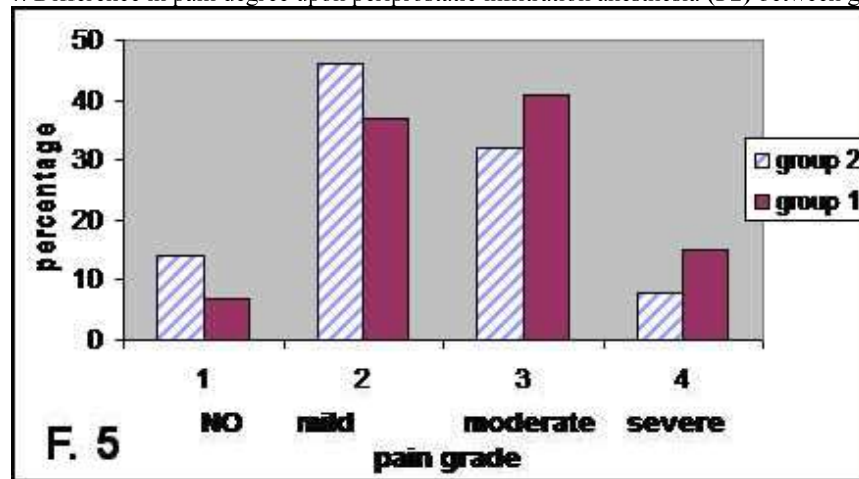


Fig 5: Difference in pain degree upon prostatic biopsy (P3) between groups

During periprostatic infiltration anesthesia (P2) 49% of the patients in G1 experienced mild pain versus only 28% in group 2, 14% have moderate pain in G1 versus only 5% in G2 while there were 67% experienced no pain at all in G 2 versus 37% in G1 (Fig. 4). Regarding pain experienced on taking the biopsy (P3), in G2, 13% of the patients experienced no pain at all. 7% of the patients in G1 reported the procedure to be pain-free. In G2, 46% and 33% of the patients experienced mild and moderate pain, respectively, as compared to G1 in which 37% experienced mild pain and 41% experienced moderate pain. Only 8% of the patients recorded severe pain in G2 as compared to 15% of patients in G1 (Fig. 5), There was a significant pain reduction experienced on probe insertion (P1) and application of the local anesthesia (P2) as well as on taking the biopsy (P3) in favor of the use of combination of rectal administration of lignocaine gel and lignocaine periprostatic injection.

The Chi-squared test for trend showed a highly significant association between the use of local anaesthetic gel+PLIA and a reduction in pain on probe insertion (P1) and local anesthesia injection (P2) ( $P = 0.0001$ ). A similar association was seen on taking of the biopsy (P3) ( $P < 0.0001$ ).

### Discussion

The TRUS guided biopsies of the prostate is the gold standard for diagnosing prostatic carcinoma, but as an invasive technique it carries some drawbacks, the most important of them is the pain experienced during the test and several attempts for making it a less painful procedure were tried as almost 80% of the patients experience some degree of pain (Collins *et al*, 1993).

There is no standard way or consensus about pain control during the procedure. Some studies suggested using sedation (Peters *et al*, 2001) others tried intrarectal lidocaine or doubted its efficacy (Issa *et al*, 2000). Periprostatic infiltration anesthesia either at the base or apex were recommend-

ed by many studies (Nash *et al*, 1996; Soloway and Obek, 2000; Pareek *et al*, 2001; Leibovici *et al*, 2002) Other reported diminished its usefulness in reducing pain (Wu *et al*, 2001). On the other hand, no single way was effective in relieving the pain completely.

Nash *et al*. (1996) was the first to report that using periprostatic nerve block (BNB) during transrectal prostate biopsies guarantees the best pain control. Most prospective, randomized, and placebo-controlled studies suggest that this anesthetic technique should be considered the gold standard (Collins *et al*, 1993; Issa *et al*, 2000; Peters *et al*, 2001; Nash *et al*, 1996; Soloway and Obek, 2000; Pareek *et al*, 2001; Leibovici *et al*, 2002; Taverna *et al*, 2002; Seymour *et al*, 2001 and ] Desgrandchamps *et al*, 1999). In only one study by Wu *et al*, lidocaine injection lateral to the seminal vesicles before prostate biopsy (Wu *et al*, 2001) showed no reduced biopsy-associated pain that can be explained by a too lateral injection site and too little lidocaine solution (Nash *et al*, 1996; Leibovici *et al*, 2002). PNBs do not completely eliminate pain. In fact, pain that originates from inserting a transrectal probe may be even more painful than a biopsy (Wu *et al*, 2001). Moreover, a transrectal lidocaine injection bilaterally to the prostate base may also be painful and cause discomfort. Thus, another local anesthesia is needed in the first part of the biopsy procedure (Eur0 08).

In the present study, the use of combined topical and infiltration anesthesia is significantly better in controlling pain during probe introduction and BNB, than the use of either alone, but less significantly better during biopsy.

Scattoni *et al*. (2008) in a randomized double blinded study recommended the use of both topical anesthesia and BNB compared with 12-core prostate biopsy, 18-core prostate biopsy detects significantly more cases of high grade prostatic intraepithelial neoplasia. However, the 18-core prostate biopsy

detects a significantly higher number of cancer only in patients with a prostate volume of 55 cc or greater. Rutala *et al.* (2007) stated that the transrectal ultrasound (TRUS)-guided prostate biopsies are among the most common outpatient diagnostic procedures in urology clinics and carry the risk of introducing pathogens that may lead to infection. They Recommendations for probe disinfection are provided and include disassembling the device and immersing the probe and the needle guide separately in a high-level disinfectant.

### Conclusion

To assess the role of pelvic plexus block (PPB) in reducing pain during transrectal ultrasonography (TRUS)-guided prostate biopsies, the combined TA and basal PLIA is recommended as the best technique to achieve a less painful TRUS guided biopsies.

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