

Trans-rectal ultrasound guided biopsy of the prostate: Nationwide diversity in practice and training in the United Kingdom

George Lee, Kakahama Attar, Marc Laniado & Omer Karim
Department of Urology, Wexham Park Hospital, London, UK

Abstract. *Introduction:* TRUS-guided needle biopsy of the prostate is the standard technique in the diagnosis of prostate cancer. However the practice is highly variable across the United Kingdom. We survey the standard approaches to TRUS biopsy of prostate, highlighting the nationwide diversity of practice and training. *Methods:* One hundred and eighty questionnaires were sent out to specialist registrars, investigating the number of prostate biopsy cores taken, the use of prophylactic antibiotics, rectal preparation and local analgesia in TRUS biopsy of the prostate. One hundred and fourteen trainees (63%) returned the questionnaires. Twenty-three percent reported sextant biopsy as standard, 36% taking eight-core and 26% taking 10 or more cores. There is no standard regime for antibiotic prophylaxis. Eighteen percent also reported rectal preparation as routine. Thirty-eight percent of the patients receive local anaesthesia prior to the biopsy. Overall, 42% of the TRUS biopsies are carried out by urologists, 29% by radiologists and 21% by both. Six percents have nurse practitioners' involvement. Fifty-six percent of trainees are involve in the TRUS biopsy, 68% do not think they received enough training to carry out the procedure. *Conclusions:* TRUS-guided needle biopsy of the prostate is the standard technique in the diagnosis of prostate cancer. Our survey highlights nationwide diversity in practice in the UK with respect of the number of cores taken, antibiotic prophylaxis and local anaesthesia utilisation. This raised the issue of standardising the practice. More urologists are also actively taking part in this procedure, making the structured training increasingly important.

Introduction

TRUS-guided needle biopsy of the prostate has been the standard technique in the diagnosis of prostate cancer since Hodge et al. [1] demonstrated the superiority of the procedure over digital guided biopsies. The procedure is considered safe and with minimal complications [2, 3]. While prostate biopsy is routinely performed, there is no standard procedure algorithm. We evaluate the diversity in practice pattern across the United Kingdom and highlight its divergent from conclusions of current published trials, with regards to the number of cores taken [4, 5], the antibiotic [6, 7], rectal preparation [8] and local anaesthetic regimes [9].

In the United Kingdom, the prostate biopsies were traditionally carried out by radiologists, but

increasingly urologists and nurse practitioners are actively participating in the procedure. We determined the prevalent practice of prostate biopsy by urologists, radiologists and nurse practitioners. Our study also demonstrates the involvement of urology trainees in the TRUS biopsy of prostate and the adequacy of training in the procedure. This provides vital information to enforce good training for future urologists with evidence-based standardised procedure algorithm.

Subjects and methods

One hundred and eighty questionnaires were sent out to training specialist registrars on current British Association of Urological Surgeons register (2003), investigating the number of cores taken,

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Dr. Shanggar a/l Kuppusamy
Pensyarah (Urologi)
PTj Surgeri
Pusat Perubatan Universiti Malaya

the use of prophylactic antibiotics, rectal preparation and local analgesia in TRUS biopsy. The registrars' involvement in the procedure and the training received were also investigated. The departments, which trained more than one specialist registrars, received one set of questionnaire to avoid duplication. The radiological trainees do not participate in this survey.

The participants were asked to state the number of cores taken (<6, 6, 8, 10, 10, 12+, no standard regime), and identify the specific antibiotics regimes (type, timing, duration and routes). The registrars were asked about the utilisation of local anaesthesia prior to the biopsy (always, occasionally, never, others) and state the type of local anaesthesia used routinely. Rectal preparation prior to the biopsy was also evaluated.

Finally, the issue of training were addressed in this study by the participant stating the specialties' involvement in caring out the procedure in their departments (urologists, radiologists, both, nurse practitioners). The trainees also declared their own active involvement in carrying out the prostate biopsies and their views on the adequacy of the current trainings they received to carry out the procedure safely.

Results

One hundred and fourteen trainees (63%) returned the questionnaires. This represents 88 urological departments across the United Kingdom with training commitments. The cross sectional distribution across the country were 69 departments in England (78%), 13 in Scotland (15%), 4 in Wales (5%), and 2 in Northern Ireland (2%).

Twenty-three percent reported sextant biopsy of the prostate as standard, 36% taking eight-core and 26% taking 10 or more cores biopsy routinely. Eleven urological departments (13%) have no standard protocol, and 2% of the practices obtain less than 6 core biopsy as standard (Figure 1). The practice who declared 'no standard core biopsy' also reported taking the number of biopsies depending on prostate volume measured by the trans-rectal ultrasound probe, but this was not further elaborated.

There are wide variations of antibiotic prophylaxis. Forty-eight percent utilise single agent antibiotics and the 52% multiple agents. Quinolone is

the most commonly used agent (93%), which are predominantly ciprofloxacin (82%). Only 18% of all respondents reported the use of rectal preparation as routine.

Forty-two percent of the patients receive local anaesthesia infiltration prior to the biopsy. Lignocaine is the only local anaesthesia utilised. The volume infiltrated ranges from 5 to 10 ml via a spinal needle under direct guidance. There were no other methods of analgesia, such as entonox inhalation, lignocaine gel or midazolam sedation, reported as routine practice in our survey.

Overall, 42% of the TRUS biopsies are carried out by urologists, 25% by radiologists and 25% by both. Eight percents have nurse practitioners' involvement. The nurse practitioners who carry out the procedures are all closely supported by the respective urological teams.

Fifty-six percent of the 114 trainees were actively involve in the TRUS biopsy. Forty-four percent have not participated in the procedure. Sixty-eight percent of the urological trainees do not think they received enough training to carry out the procedure routinely.

Discussion

TRUS-guided needle biopsy of the prostate is the standard technique in the diagnosis of prostate cancer. Although Hodge et al. [1] reported sextant biopsy as standard, increasing evidence has demonstrated minimum of eight-core biopsy has better cancer detection [4, 5]. Our survey demonstrated majority of practice is now taking more than eight core biopsy as standard (62%), however, nearly a quarter of the UK practices (23%) still carry out traditional sextant biopsies or less, which has been shown to be inadequate since it misses 20% of prostate cancer [4]. The other interesting finding from this study shows that 18% of practice utilises prostate volume dependent biopsy strategy. This may represent a trend for future practice to improve cancer detection individualised to prostate volume.

The use of antibiotics prophylaxis for TRUS biopsy significantly reduces the incidence of infective complications [6, 7], but no recommendation exists as to the most appropriate antibiotics regimen. The variability of prophylactic antibiotic regimes is also demonstrated in other studies [6, 7]. However, nearly half (48%) of the practice utilises

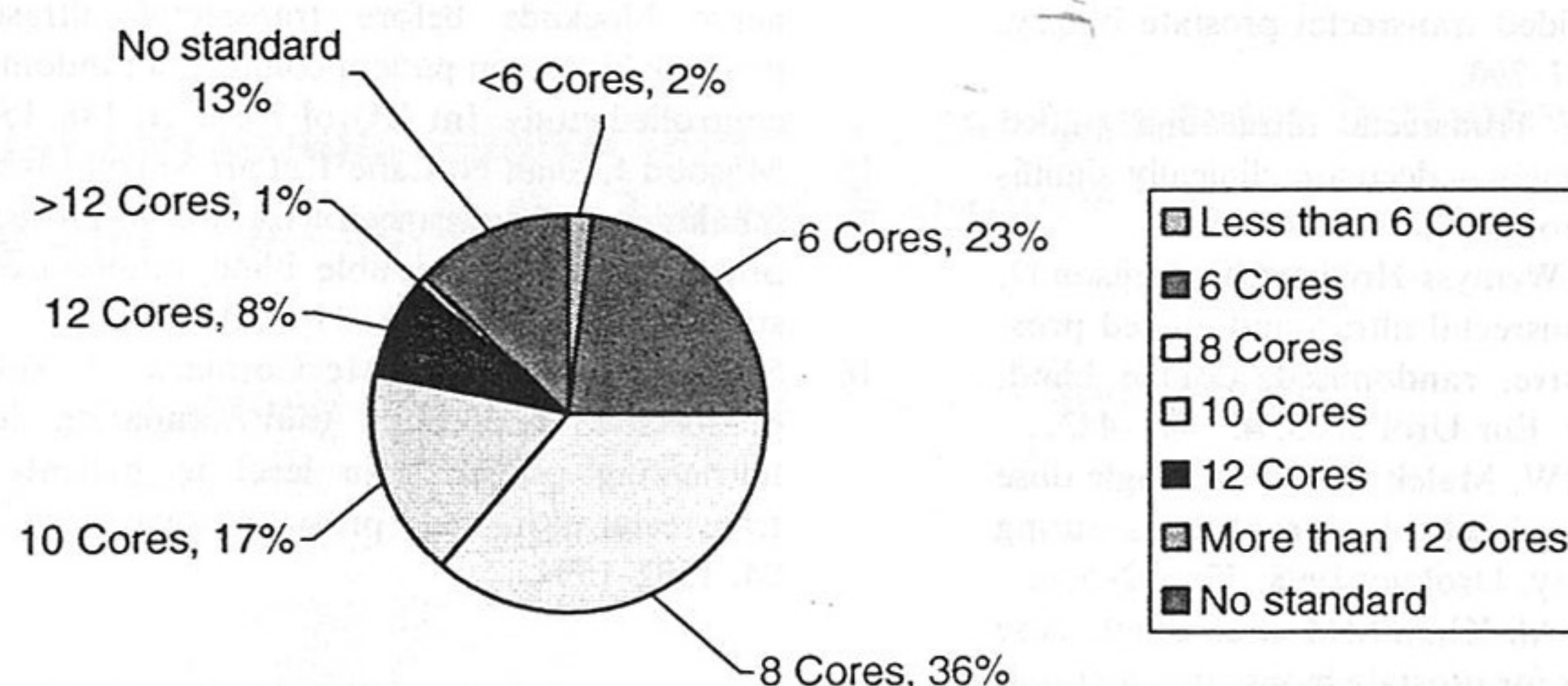


Figure 1. Trans-rectal ultrasound guided biopsy of the prostate strategies across the UK.

only single agent antibiotics, and the remainder opt for multi-agent prophylaxis, including combination of oral, intramuscular, intravenous and per-rectal routes. Thirty-four percent of the practice also continues the antibiotics for further 3 days after the biopsy. Quinolones is used in the vast majority of practice (93%) and dominated by ciprofloxacin (82%). The use of single dose ciprofloxacin [10] or levofloxacin [11] has been demonstrated to be effective in routine TRUS biopsy of the prostate. Other randomised controlled study also demonstrated continuing the antibiotics prophylaxis for 3 days offers no benefit over single dose [12]. This raises the concerns of over-treatment in majority of the patients prior to the prostate biopsy.

The use of rectal preparation is not routine in majority of the centres surveyed. Only 18% utilised enema prior to the prostate biopsy. There are only two small studies in the literature addressing this issue [8, 13], which demonstrate enema before biopsy does not appear to contribute significantly to reducing infective complications.

Several recent prospective double blind placebo randomised controlled study recommend the use of local anaesthesia as part of standard TRUS biopsy of the prostate [9, 14]. These studies demonstrated local anaesthesia infiltration is simple and well tolerated by patients and significantly reduce the pain associated with the biopsy. Our survey shows that only 48% of the patients undergoing the prostate biopsy received the benefit of the local anaesthesia. Other methods of analgesia such as entonox inhalation [15] or lignocaine gel [16], were not reported as routine practice in our survey. This may due to relatively low response rate from the participants

(63%), hence, not a true representation of practice in the country.

Urologists are now dominating the provision of TRUS prostate biopsy in the UK, with up to 75% involvement. There is also an emergence of nurse practitioners' participation in this procedure, which is under direct supervision of the urologists. This is a significant shift of practice from radiologists to urologists. However, only 56% of the urologist trainees surveyed are actively involve in the TRUS biopsy and 68% of them do not think they received enough training to carry out the procedure. This highlights the necessity of structured programmes in TRUS biopsy training for a new generation of urologists led practice.

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Address for correspondence: George Lee, Specialist Registrar, Department of Urology, Wexham Park Hospital, 8 Marloes Road, London, UK
E-mail: georgeleeurology@yahoo.co.uk

