

DIGITAL RECTAL EXAMINATION OF PROSTATE: DOES EXAMINER'S EXPERIENCE INFLUENCE THE RESULTS?

H.Krishna Moorthy, Biju S Pillai, Sony Bhaskar Mehta

Division of Urology, Institute of Nephro-Urology, Lourdes Hospital, Kochi, India 682 012

Address for Communication:

Dr.H.Krishna Moorthy, MS, DNB (Surg), MCh, DNB (Uro), MNAMS

Consultant Urologist, Division of Urology, Institute of Nephro-Urology, Lourdes Hospital, Kochi, India 682 012

Ph. +91 98470 56690; Email: dr.moorthy65@gmail.com

Abstract

There is lack of uniformity in grading the size or assessing the consistency of prostate gland with Digital Rectal Examination (DRE) when done by different clinicians during evaluation of prostate pathology. This study was to compare the results of DRE findings in prostate pathology performed by Urologists at three different levels of clinical practice in the same set of patients and assess the accuracy of the findings with respect to their clinical experience.

Materials and Methods: 200 patients with clinical features of prostatomegaly having no documented Urinary Tract Infection were subjected to DRE separately by one Resident in his Final year of training, Junior Consultant (5 years post degree) and Senior Consultant with more than 10 years clinical experience. Their findings were correlated with USG Abdomen estimated volume. Patients with DRE detected hard area in the prostate underwent Trans-rectal tru-cut biopsy of the hard area in the prostate and the biopsy reports were again correlated with the clinical findings.

Results: DRE grades assessed by Final year Resident correlated with USG Abdomen estimated volume in 63%, while the same for Junior Consultant was 69% and that for Senior Consultant was 71%. The percentage correlation was better with smaller clinical size of the prostate when the overall DRE assessment of the prostate volume by the three sets of observers was compared to USG Abdomen prostate volume. There was also error in diagnosing abnormal texture of the prostate by Final year Resident in a significant number of patients.

Conclusions: There were significant variations in DRE findings of prostate among clinicians, with the accuracy improving with increase in clinician's experience. DRE findings should always be supplemented with other investigations before a final conclusion regarding the prostate pathology is made.

Key Words: Prostate, Digital Rectal Examination, Volume, Ultrasound Scan Abdomen

Introduction

The unique modality of Digital Rectal Examination (DRE) has become an integral part of the medical teaching program for medical students, because of its obviousness, limited invasiveness and cost-effectiveness. DRE is used as a physical tool for prostate evaluation with sufficient accuracy [1]. The word DRE has derived from the Latin term palpatio per anum. It was the mainstay of diagnosis for prostate diseases until the 1990s, when Prostate Specific Antigen (PSA) and ultrasonography supplemented, but not completely replaced DRE. It is widely known that there is lack of uniformity in grading the prostatic size or the consistency with this diagnostic tool. Many feel that there is wide variation in the assessment of prostate with DRE among different clinicians. Currently, there are no published studies auditing the accuracy of experience of the examiners on assessing the prostate pathology by DRE.

This paper was done to compare the outcome of DRE findings of prostate pathology performed by three levels of Urologists (based on their clinical experience) in the same set of patients and assess the accuracy of the findings with respect to their clinical experience.

Materials and Methods

After procuring necessary approval from the Institutional Ethics Committee and informed consent from the patients, 200 patients with clinical features of prostatomegaly with no comorbidities like documented Urinary Tract Infection (UTI), Diabetes Mellitus, Urolithiasis and renal failure, admitted in Urology wards were included in the study. Each patient was subjected to digital rectal examination separately by a single Urology Resident in his Final year of training, one Junior Consultant (5 years post degree) and one Senior Consultant with more than 10 years clinical experience. The clinical

grade of prostate enlargement (according to the grading system of Romero *et al.*^[2]) and any palpable abnormality in the texture of prostate (hard nodules) were noted separately by all three of them, blinded from each other's findings. Abdominal Ultrasonography (USG Abdomen) was done in all these patients to assess the size of prostate. These findings were correlated to the DRE findings of the three groups of evaluators. Transrectal tru-cut biopsy of the hard area in the prostate was done in those patients who had such findings by DRE and the biopsy reports were again correlated with the clinical findings of the evaluators.

Results

It was observed that DRE grades assessed by Final year Resident correlated with USG Abdomen estimated volume in 63%, while the same for Junior Consultant was 69% and that for Senior Consultant was 71.

When the overall DRE assessment of the prostate volume assessed by the three sets of observers were compared to the prostate volume assessed by USG Abdomen, it was observed that the percentage correlation was better when the clinical size of the prostate was smaller. Large size glands had more chance of error when volume was assessed by DRE. These findings are given in Table No. 1

Twelve out of the 200 patients had suspicious hard nodule appreciated by DRE performed by Senior and Junior Consultants of which 8 turned out to be confirmatory of Adenocarcinoma of prostate in biopsy. The Final year Resident appreciated the suspicious areas only in 7 patients (i.e., hard area missed in 5 patients), out of which 4 turned out to be adenocarcinoma of prostate in biopsy. These findings are given in Table No. 2

DISCUSSION

DRE as a diagnostic tool stands far ahead of other physical methods of clinical examination of patients, due to its simplicity in the assessment of prostate grade and consistency. However, due to empirical knowledge and lack of standardization, it possesses a significant error in diagnostic accuracy. In this study, we followed the clinical grading of prostate by DRE recommended by Romero *et al.*^[2] with minor modifications to correlate the findings of DRE with the existing four grade USG Abdomen classification^[3, 4]. We observed that there was significant inter-observer variability in the assessment of prostate volume and texture among clinicians who regularly perform DRE.

Barnes *et al.*^[5] in 1959 reported grading of Benign Prostatic Hyperplasia (BPH) based on the degree of its encroachment into the rectum. Recently, Tsui *et al.*^[6] documented rating of the DRE procedure based on the width of the posterior surface area using a three-setting scale, where scale 0 is < two widths of the finger, 1 is ≥ two but < three widths of the finger, and 2 is ≥ three widths of the finger. Similarly, Reis *et al.*^[7], in their study developed a fingertip graphical schema where for each fingertip of prostate surface area on DRE, the examiner was guided to consider 10 cubic centimetres (cc) of prostate volume. Thus for five finger-tip impression on the posterior surface area, a prostate volume of 50 cc was considered. Thus it is evident that the assessment of prostate volume by DRE is yet to be standardised. It is very well known that there are limitations in teaching and improving the skill of clinicians who perform DRE, due to the lack of standardisation. Furthermore, the availability of virtual reality and rectal teaching associates are limited by cost constraints and cultural restrictions. During years of clinical experience

DRE Grade of prostate	Percentage correlation with Transabdominal USG Grade
1	72%
2	68%
3	64%
4	50%

Table 1: Overall percentage correlation of prostate with respect to DRE grade

Observer	Hard nodule positive	Biopsy proved Ca prostate
Final year Resident	7/12	4
Junior Consultant	12/12	8
Senior Consultant	12/12	8

Table 2: Inter-Observer variability in identifying hard nodules in prostate by DRE

and empirical observation, it was found that DRE could assess only the posterior surface area of a three-dimensional structure [8]. Probably patient's morphometric variables, as well as the length of the examiner's index finger, play an important role on the accuracy of DRE. [9]

In our study, the DRE grades of Final year Resident correlated with USG estimated grade in 63%, while the same for Junior Consultant is 69% and that for Senior Consultant is 71%. There was also error in diagnosing abnormal texture of the prostate by Final year Resident in a significant number of patients, compared to the other group of observers. This indicated that, as clinical experience increased, the accuracy of DRE also increased.

Conclusion

There are significant variations in the DRE findings of prostate performed by different clinicians, with the accuracy improving with increase in clinician's level of clinical experience. DRE findings should always be supplemented with other investigations before a final conclusion regarding the prostate pathology is made. DRE still is an integral part of examination of a Urology patient and the skill would improve as clinical experience of the clinician improves.

Limitations of study

Transrectal Ultrasound (TRUS) should be preferred over USG Abdomen for better correlation and validation of the accuracy of DRE findings.

USG abdomen uses the ellipsoid formula, assuming that prostate is roughly ellipsoid in shape, which is not true in some cases.

Clinical examiner's finger size may vary, which may give an erroneous finding/result during DRE.

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Conflicts of interest

There are no conflicts of interest.

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