



Correlation of digital rectal examination and serum prostate-specific antigen levels for detection of prostate cancer

Retrospective analysis results from a tertiary care urology centre

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INTRODUCTION



RESULTS



DISCUSSION

- Prostate cancer is evolving in terms of diagnosis and management
- With widespread propagation of PSA in detection of prostate cancer, DRE has become oblivious
- Abnormal DRE is associated with prostate cancer in the setting of elevated PSA, however the role of DRE in the setting of normal PSA remained understudied
- TRUS-guided prostate biopsy is the vital element in diagnosis of prostate cancer.
- In our study, we analysed detection rate of prostate cancer on contemporary 12-core TRUS biopsy in men with either suspicious DRE and/or PSA ≥ 4.0 ng/ml.

Table 1: Characteristic of study population.

Demographics	Total	Positive for carcinoma	Negative for carcinoma	p-value
Patients, n (%)	823	330(40.09)	493(59.90)	
Age (mean in years \pm SD)	65.2 \pm 10.22	66.25 \pm 9.45	64.3 \pm 8.96	0.0018
DRE findings	Normal, n (%)	79(23.09)	263(76.90)	
	Suspicious, n (%)	251(52.18)	230(47.81)	0.0001
Serum PSA (median in ng/ml \pm SD)		33 \pm 260	9.02 \pm 64.84	0.0001
Serum PSA ≥ 4 ng/ml, n (%)	684(83.11)	311 (45.46)	373 (54.53)	
Gleason Score (Mean \pm SD)	7.35 \pm 0.92			

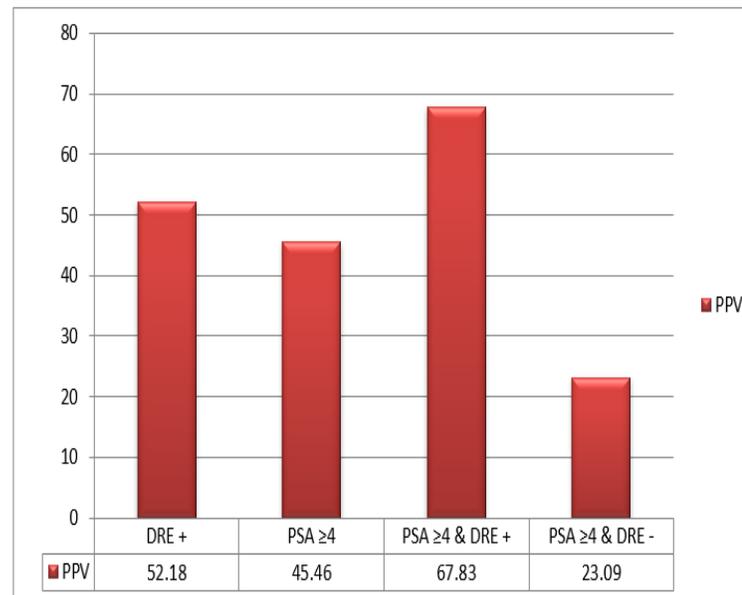
Table 2: Serum PSA level, DRE findings and prostate cancer detection rate.

PSA (ng/mL)	Total patients (n)	Malignancy detected n (%)	Normal DRE		Suspicious DRE	
			Incidence (n)	Malignancy detected n (%)	Incidence (n)	Malignancy detected n (%)
0-2.5	94	14(14.89)	00	00	94	14(14.89)
2.51-4.00	45	5(11.11)	00	00	45	5(11.11)
Total	139	19(13.66)				
4.01-10.00	188	37(19.68)	120	11(9.16)	62	26(41.93)
10.01-20.000	184	51(27.71)	118	14(11.86)	68	37(54.41)
≥ 20.01	312	223(71.47)	104	54(51.92)	212	169(79.71)
Total	684	311(45.46)	342	79(23.09)	342	232(67.83)
Grand Total	823	330(40.09)	342	79(23.09)	481	251(52.18)

Table 3: Characteristic of DRE at various serum PSA levels for overall prostate cancer detection rate on biopsy.

Suspicious DRE at PSA level	Numbers	Sensitivity (%)	Specificity (%)	Positive predictive value (%)	Negative predictive value (%)
≤ 2.50	94	--	--	--	--
2.51-4.00	45	--	--	--	--
4.01-10.00	188	70.27	75.17	41.93	90.83
10.01-20.00	184	72.54	77.03	54.41	88.13
≥ 20.01	312	75.78	53.76	79.71	48.07
PSA > 4 & DRE +	684	74.59	70.50	67.83	76.90
Total	823	76.06	53.34	52.18	76.90

Positive predictive value for detection of prostate cancer with respect to various parameters.



- Early stage detection is the goal of every cancer screening test.
- Current established detection methods of prostate cancer include DRE, serum PSA and TRUS-guided prostate biopsy using a systematic 12-core method; however, one aspect of prostate cancer screening that remains unsettled is the role of digital rectal examination.
- Multiple studies and guidelines give conflicting opinions regarding use of DRE as a screening tool.
- Most guidelines use PSA ≥ 4 ng/ml for prostate cancer screening.
- In lack of consensus regarding the utility of DRE for prostate cancer screening, we sought to evaluate the relationship between PSA and DRE from our institutes.
- Our study demonstrated that detection of tumours by DRE was significantly higher (52.18%) than by PSA (45.46%). Among positive biopsy patients, 5.75% were detected by digital rectal examination alone when serum PSA level was normal (less than 4).
- The positive predictive value was 45.46% when PSA was elevated and 52.18% when digital rectal examination was suspicious and 67.83% when both tests were used in combination.

CONCLUSION

- Suspicious DRE was significantly associated with detection of prostate cancer across all PSA levels.
- Patients with PSA < 4 can harbour prostate malignancy and such cases can be detected by use of DRE in screening of all patients.
- PSA and digital rectal examination should be used in combination for screening to increase detection of prostate cancer.

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MATERIALS AND METHODS

It was an institution based, retrospective observational study conducted in department of urology, Institute of Post Graduate Medical Education & Research, Kolkata

AIM OF THE STUDY:

To evaluate detection rate of prostate cancer by digital rectal examination (DRE) and serum prostate-specific antigen (PSA) levels followed by standard 12-core transrectal ultrasound (TRUS) guided prostate biopsy.

STUDY PERIOD: May 2012 to February 2020

METHODOLOGY:

After screening of patients presenting with LUTS with DRE and Serum PSA level we enrolled patients for TRUS guided 12-core prostate biopsy. Indications included PSA level ≥ 4 ng/ml and/or suspicious DRE findings. Retrospective analysis was done to find out correlation between suspicious rectal examination and various serum PSA levels in detection of cancer prostate