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Hand patterns in prostatic cancers

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I. Introduction

Prostatic cancers has been showing increasing trend in the elderly age group.We intended to explore if there are hands patterns which play a significant role towards prostate cancer- the most common cancer in the geriatric age group but the present day knowledge of its etiology is limited (Li et al, 2004). It's a cross sectional study which measures the index and ring finger length in patients with prostate cancer.

Finger length ratio has since been correlated to medical, behavioral and psychological conditions, particularly those influenced by prenatal hormone exposure (J Solid Tumors, 2012). The ratio of the lengths of the index (2D) and ring (4D) fingers has been suggested as a proxy indicator of prenatal androgen activity, with low 2D : 4D reflecting higher in utero testosterone exposure (Manning et al, 1998; McIntyre, 2006; Ho¨nekopp and Watson, 2010). There are several lines of evidence indicating that 2D : 4D is affected by prenatal androgens (Breedlove, 2010), and that digit ratios are longitudinally stable (McIntyre et al, 2005; Trivers et al, 2006).
Hormone exposure in early life has been implicated in the etiology of numerous cancers (Potischman et al, 2005). Prostate cancer is a hormonally driven and a regulated disease, but studies have failed to detect associations between a single measure of hormone levels in adulthood and prostate cancer risk (Roddam et al, 2008). Two recent studies have aimed to assess whether 2D : 4D is associated with prostate cancer (Jung et al, 2011; Rahman et al, 2011). Both of these studies concluded that low 2D : 4D, and thereby high prenatal testosterone, is a marker of increased risk of prostate cancer. Prostate cancer is more common in Western men, and incidence is rising rapidly in most countries, including low-risk populations (Ferlay & Forman 2008). Highest incidence rates for prostate cancer are reported from US, Detroit, Black (AAR = 141.5 per 105) while in the Asian subcontinent, the rates are highest in Japan, Hiroshima (AAR = 10.9 per 105) (Parkin & Thomas 2002). In India, the age-standardized rates (per 105) vary between Delhi (11.5), Mumbai (6.3), Chennai (5.2), Bangalore (6.0) and Barshi (1.6) (Nandakumar, 2006). Prostate cancer (PCA) is the most common cancer in men and the commonest overall, with a reported incidence of 165.8 per 100.000 (Edward et al, 2006). Although its exact etiology is currently unknown, it has been correlated to factors such as age, race, familial history and hormone exposure (Hsing, Chokkalingam, 2010).

II. Materials and Methods:

A sample size of 27 patients between 50 and 80 years were included this study all subjects who were diagnosed by clinical and histological analysis were currently under treatment follow-up. They were subjected to measurement of their index and ring finger after being clearly told of what we intended to do. The length of the index finger was divided by the length of the ring finger to obtain 2D : 4D ratio which was then divided into three groups 2D>4D, 2D<4D, 2D=4D and the data was analyzed for obtaining results**.**

III. Results:

The mean length of the Index (2D) finger to Ring finger (4D) in the Right hand of 27 patients suffering from prostatic cancer was 10.03 to 10.54 (cms) (t= 2.596, p= .012 sig) respectively with mean age of 67.07 ± 5.75 and it was 9.51 to 9.80 (cms) (t=1.284, p=0.205 ns) for the 27 controls with a mean age of 70.92 ± 7.3.

In the right hand the 2D < 4D or lower 2D:4D ratio or values below 1 had 20 patients (74.1%) having prostate cancer and their reading where significant with an OR 1.96, 95% CI 0.62 – 6.22 indicating the risk pattern of having a lower ratio or 2D<4D or longer ring finger (4D) than the index finger (2D). The same ratio 2D < 4D indicated a higher OR 2.55, 95% CI 0.84 – 7.84 for the left hand in these patients.

In the right hand the 2D > 4D or higher 2D:4D ratio or values above 1 had 3 patients (11.1%) gave OR 0.55, 95% CI 0.19 – 2.56, while the left finger gave an OR 0.68, 95% CI 0.19 – 2.31, both the values are indicative of the protective function of having a longer index (2D) finger than the ring (4D) finger or 2D>4D or higher 2D:4D which is greater than 1.

Right hand values :

RIGHT HAND

GROUP	Finger	N	Mean	Std. Deviation	T
PROSTATE CANCER	Index(2D)	27	10.0370	.695	2.596
	Ring(4D)	27	10.5444	.740	p=.012 sig
CONTROLS	Index(2D)	27	9.5111	.827	1.284
	Ring(4D)	27	9.8000	.809	p=.205 ns

RIGHT HAND

FINGER/GROUPS	PROSTATE CANCER	CONTROLS	Total	ODDS RATIO	CONFIDENCE INTERVALS 95%
2D < 4D	20 74.1%	16 59.3%	36 66.7%	1.96	0.62 – 6.22
2D = 4D	4 14.8%	6 22.2%	10 18.5%	0.61	0.15 – 2.46
2D > 4D	3 11.1%	5 18.5%	8 14.8%	0.55	0.19 – 2.56
Total Count %	27 100.0%	27 100.00%	54 100.0%		

LEFT HAND VALUES:

LEFT HAND

GROUP	Finger	N	MEAN	STANDARD DEVIATION	T
PROSTATE CANCER	Index	27	10.1000	.88492	1.205
	Ring	27	10.3667	.73485	p=.234 ns
CONTROLS	Index	27	9.6259	.99406	.688
	Ring	27	9.8000	.83857	p=.495 ns

LEFT HAND

FINGER/ GROUPS	PROSTATE CANCER	CONTROLS	Total	ODDS RATIO	CONFIDENCE INTERAVAL 95%
2D < 4D	19 70.4%	13 48.1%	32 59.3%	2.55	0.84 - 7.84
2D = 4D	2 7.4%	6 22.2%	8 14.8%	0.280	0.05 - 1.54
2D > 4D	6 22.2%	8 29.6%	14 25.9%	0.680	0.19 - 2.31
TOTAL COUNT%	27 100.0%	27 100.0%	54 100.0%		

2D<4D = ratio below 1 or index shorter than ring
2D=4D = ratio equal to 1 or index equal to ring
2D>4D = ratio above 1 or index greater than ring

IV. Discussion:

Two recent studies have examined whether 2D : 4D is associated with prostate cancer risk. The first was a clinical cohort study of 366 Korean men presenting with lower urinary tract symptoms (Jung et al, 2011). This study found that the odds of being diagnosed with prostate cancer were significantly higher for men with low 2D : 4D compared with high 2D : 4D (OR 3.22, 95% CI, 1.33–7.78). The second was a large case–control

study, which reported an inverse association between self-assessed right 2D : 4D and odds of prostate cancer (OR for index finger longer than ring finger vs index finger shorter than ring finger 0.67, 95% CI, 0.57–0.80) (Rahman et al, 2011). This study also reported a remarkably strong association between 2D : 4D and prostate cancer diagnosed before the age of 60 years (OR 0.13, 95% CI, 0.09–0.21).

We cannot exclude the possibility that high 2D : 4D is associated with lower risk of early onset prostate cancer. High 2D : 4D is a marker of low in utero testosterone exposure, and thus hormone activity, early in development, might impact upon later risk of prostate cancer. Further research is required to clarify any association between 2D : 4D and prostate cancer, especially for younger men under 60 years in India**.**

V. Conclusion:

The mean of ring finger being taller than index finger in patients with prostatic lesion allows us to infer that, there could be a possibility of exploring the digits length which will invariably add to the etiological factor of research in prostate cancer and a need for a larger multi centric study may concretize the etiological finding and necessary education & prevention can be met in an Indian context. Hand pattern might represent a simple marker for prostate cancer risk, particularly in men age above 60 years. Further research is required to clarify any association between 2D : 4D and prostate cancer, especially for younger men under 60 years**.**

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Conflict of Interest:

We declare hereby that there is no conflict of interest and there is no industry or sponsor for this paper.

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