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MEN UNDERGOING TRANSURETHRAL PROSTATE SURGERY (TURP) FOR ACUTE URINARY RETENTION (AUR) DUE TO ENLARGED PROSTATE TIED TO EARLIER DEATH

Hypothesis / aims of study

AUR is reported to carry significant short term mortality(1). Although TURP is considered an effective treatment of choice for AUR due to benign prostate hyperplasia (BPH), it has been reported to carry significant morbidity and even peri-operative mortality(2,3). However their implication for the long term mortality remains unclear. In this regard, this retrospective study is carried out to: 1) explore the difference of the overall long term survival between the men undergoing TURP (TURPmen) and the men of the same age groups of the general population (GPmen) ; 2) explore the difference of the overall survival between the men undergoing TURP for male-LUTS due to BPH (LUTSmen) and those for AUR due to BPH (AURmen) of the respective age groups ; 3) identify the factors predicting the earlier death.

Study design, materials and methods

Database (from 2002 to 2012) of 3718 consecutive TURP is linked to patient diagnoses, hospital statistics / records and central registry of life / death. 218 men were excluded {188 had prostate cancer, 5 died within 4 weeks post-op, 25 records were missing}. Thus, 3500 men { mean age 72, range 42-96 } were studied. Death rates of different age groups of TURPmen are compared to the standardized death rates of GPmen of the same age groups reported by Census & Statistics and Health Department of the government. The difference between overall survival of LUTSmen and AURmen is evaluated with Kaplan-Meier method. Multivariate Cox regression analysis is performed to identify covariates predicting death. Hazard ratios (HR) are reported

Results

Indications for and the distribution of age groups of men at TURP are shown in table I. Baseline comorbidities are shown in table II. TURP was performed in equal proportion to treat LUTS and AUR. The whole cohort has been followed for a mean period of 6 years (range 0.1-13.2). Overall 21% LUTSmen and 34% AURmen died respectively within a mean follow-up time of 6 years post-TURP. The relative risk (RR) of death for both indications of TURP across different age groups of men and the hazard ratios (HR) of the risk factors predicting earlier death are tabulated in table I & II respectively.

Interpretation of results

An extra death toll of 35% was noted in TURPmen in a mean follow-up time of 6 years following TURP as compared to that of GPmen. It is attributed to the fact that the death rate of AURmen is 50-60% higher whereas the survival of LUTSmen is close to that of GPmen. Of note, 39.2% of the deceased TURPmen died of CVA / IHD / CHF, this proportion of death is nearly twice as high as those of local population. HR (death) for AURmen is significantly higher than LUTSmen by 49%-100% across different age groups / diseases and is most evident in men 60-80y.o. (HR1.49-1.62 Table I). The earlier death of AURmen is associated with the comorbidity of HT, IHD / CHF, CVA, DM, higher fraction of elderly men in this group. Even so, AUR per se still stands alone as a significant risk factor for shortening life (HR increased by 34%-64%) across different age groups and causes of death (Table I&II). As such, AUR may be a signature of poor general health status and hence may allude to earlier death. This observation is more apparent in men younger than 80 y.o.

Concluding message

Men (≤ 80y.o.) undergoing TURP for AUR have shorter life expectancy, when compared to the men of the general population and those who need TURP for treating male-LUTS due to BPH, in association with the comorbidities and AUR per se

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Table I: The comparison of the mortality between men undergoing TURP (TURPmen) and men of the general population (GPmen) AND between men undergoing TURP for LUTS (LUTSmen) and men undergoing TURP for AUR (AURmen) across different age groups and causes of death (statistical significance was taken as p<0.05 and are denoted in "Red" colour; 95%CI = 95% confidence intervals)

Age at TURP	40 - 60			60 - 70			70 - 80			80 - 85			> 85			Whole Cohort		
Number (N) (% of Whole Cohort)	266 (8%)			1083 (31%)			1494 (43%)			434 (12%)			223 (6%)			3500 (100%)		
Indication for TURP	LUTS	AUR	p-value	LUTS	AUR	p-value	LUTS	AUR	p-value	LUTS	AUR	p-value	LUTS	AUR	p-value	LUTS	AUR	p-value
Number (N) (% Age Group)	168 (63%)	98 (37%)	p=0.003	641 (59%)	442 (41%)	p<0.001	728 (49%)	766 (51%)	p=0.73	159 (37%)	275 (63%)	p<0.001	69 (31%)	154 (69%)	p<0.001	1765 (50%)	1735 (50%)	p=0.51
Mean follow up time(FU) (years) (SD) (range)	7.1 (3.6) (0.86–13.2)	7.3 (3.3) (1.63–13.2)	p=0.68	6.7 (3.3) (0.6–13.2)	6.9 (3.3) (0.37-13.2)	p=0.84	6.1 (3.2) (0.1-13.2)	5.9 (3.2) (0.1–13.2)	p=0.11	4.7 (2.8) (0.2-12.2)	4.9 (2.8) (0.1-13.1)	p=0.76	4.2 (3.1) (0.1-12.7)	4.4 (2.8) (0.3-12.4)	p=0.68	6.2 (3.3) (0.1-13.2)	5.9 (3.2) (0.1-13.2)	p=0.003
Expected no. of death in the general population	5 (3.0%)	3 (3.1%)		55 (8.6%)	39 (8.8%)		160 (22.0%)	163 (21.3%)		57 (35.8%)	102 (37.1%)		38 (55.1%)	88 (57.1%)		315 (17.8%)	395 (22.8%)	
Actual no. of death in the cohort	7 (4.2%)	7 (7.1%)		68 (10.6%)	80 (18.1%)		178 (24.5%)	270 (35.2%)		74 (46.5%)	134 (48.7%)		44 (63.8%)	98 (63.6%)		371 (21.0%)	589 (33.9%)	
Relative Risk of death	1.40 (0.45 –4.32)	2.33 (0.62 –8.76)		1.24 (0.88 - 1.73)	2.05 (1.43-2.94)		1.11 (0.92-1.34)	1.66 (1.40-1.96)		1.30 (1.01-1.69)	1.31 (0.88-1.60)		1.16 (0.88-1.53)	1.11 (0.93-1.34)		1.18 (1.03-1.35)	1.49 (1.34-1.66)	
Univariate Kaplan-Meier Analysis			Hazard Ratio (95%CI)			Hazard Ratio (95%CI)			Hazard Ratio (95%CI)			Hazard Ratio (95%CI)			Hazard Ratio (95%CI)			Hazard Ratio (95% CI)
Actual no. of death of all causes	7 (4.2%)	7 (7.1%)	1.69 (0.59-4.83)	68 (10.6%)	80 (18.1%)	1.62 (1.17-2.24)	178 (24.5%)	270 (35.2%)	1.49 (1.23-1.80)	74 (46.5%)	134 (48.7%)	1.01 (0.76-1.34)	44 (63.8%)	98 (63.6%)	0.98 (0.68-1.40)	371 (21.0%)	589 (33.9%)	1.69 (1.49-1.93)
No. of deaths due to cancer	6 (3.6%)	0 (0%)	0.023 (0.00-22.73)	20 (3.1%)	27 (6.1%)	1.87 (1.04-3.32)	42 (5.8%)	63 (8.2%)	1.44 (0.98-2.16)	16 (10.1%)	30 (10.9%)	1.06 (0.58-1.94)	7 (10.1%)	13 (8.4%)	0.83 (0.33-2.10)	91 (5.2%)	133 (7.7%)	1.55 (1.19-2.02)
No. of deaths due to IHD / CHF	0 (0%)	2 (2.0%)	125.0 (0.00-1000.00)	24 (3.7%)	25 (5.7%)	1.43 (0.82-2.51)	63 (8.7%)	92 (12.0%)	1.42 (1.03-1.96)	26 (16.4%)	40 (14.5%)	0.85 (0.52-1.39)	16 (23.2%)	44 (28.6%)	1.20 (0.68-2.13)	129 (7.3%)	203 (11.7%)	1.67 (1.34-2.08)
No. of deaths due to stroke (CVA)	1 (0.6%)	2 (2.0%)	3.32 (0.30-37.03)	4 (0.6%)	8 (1.8%)	2.71 (0.81-9.01)	14 (1.9%)	3 (0.4%)	0.21 (0.06-0.74)	5 (3.1%)	4 (14.5%)	0.42 (0.12-1.66)	2 (2.90%)	2 (1.3%)	0.43 (0.06-3.05)	26 (1.5%)	19 (1.1%)	0.78 (0.43-1.41)
No. of deaths due to other causes	0 (0%)	3 (3.1%)	125.0 (0.006-1000.00)	20 (3.1%)	20 (4.5%)	1.38 (0.74-2.57)	59 (8.1%)	112 (14.6%)	1.88 (1.37-2.58)	27 (17.0%)	60 (21.8%)	1.25 (0.79-1.96)	19 (27.5%)	39 (28.6%)	0.90 (0.52-1.56)	125 (7.1%)	234 (13.5%)	2.01 (1.62-2.49)

Table II The hazard ratios of different covariates leading to shortened survival of men undergoing TURP (statistical significance was taken as p<0.05 and are denoted in **"Red"** colour; 95%CI = 95% confidence intervals)

Co-variates (Baseline Co-morbidities)	N (%Cohort)	Causes of death during follow-up	No. of deaths during follow-up	Unadjusted after Univariate Analysis Hazard Ratio (95%CI)		p-value	Adjusted after Multivariate Analysis Hazard Ratio (95%CI)		p-value
Hypertension	1857 (53.1%)	All causes	551	1.31	(1.15-1.49)	<0.001	1.34	(1.17-1.54)	<0.001
		Cancer	137	1.52	(1.16-1.98)	0.003	1.36	(1.02-1.81)	0.034
		IHD/CHF	176	1.10	(0.88-1.36)	0.4	1.22	(0.97-1.54)	0.089
		Others	238	1.55	(1.25-1.92)	<0.001	1.48	(1.18-1.86)	<0.001
Old Age >72y.o.	1826 (52.2%)	All causes	725	3.79	(3.26-4.39)	<0.001	3.06	(1.68-3.17)	< 0.001
		Cancer	147	2.26	(1.72-2.99)	<0.001	2.08	(1.56-2.78)	< 0.001
		IHD/CHF	255	4.03	(3.12-5.21)	<0.001	3.13	(2.40-4.07)	< 0.001
		Others	323	5.71	(4.37-7.46)	<0.001	4.60	(3.50-6.10)	< 0.001
Acute Urinary Retention (AUR) treated with TURP	1735 (49.6%)	All causes	589	1.69	(1.49-1.93)	<0.001	1.42	(1.24-1.62)	<0.001
		Cancer	133	1.55	(1.19-2.02)	0.001	1.39	(1.06-1.82)	0.016
		IHD/CHF	203	1.67	(1.34-2.08)	<0.001	1.34	(1.07-1.68)	0.011
		Others	253	2.01	(1.62-2.49)	<0.001	1.64	(1.32-2.04)	< 0.001
Ischaemic Heart (IHD) / Congestive Heart Failure (CHF)	728 (20.8%)	All causes	388	3.00	(2.64-3.42)	<0.001	2.31	(1.68-3.17)	<0.001
		Cancer	46	1.13	(0.82-1.56)	0.464	1.60	(0.71-3.58)	0.255
		IHD/CHF	166	4.41	(3.55-5.46)	<0.001	4.05	(2.35-7.00)	< 0.001
		Others	176	2.58	(2.08-3.21)	<0.001	1.51	(0.84-2.70)	0.167
D M	616 (17.6%)	All causes	326	1.14	(0.97-1.33)	0.123	1.30	(1.10-1.54)	0.002
		Cancer	38	1.022	(0.72-1.45)	0.903	1.32	(0.92-1.90)	0.128
		IHD/CHF	67	1.21	(0.93-1.59)	0.156	1.19	(0.90-1.57)	0.22
		Others	221	1.13	(0.87-1.48)	0.35	1.35	(1.03-1.78)	0.029
Asthma / COPD / Obstructive Sleep Apnoea	554 (15.8%)	All causes	313	2.64	(2.30-3.03)	<0.001	1.06	(0.79-1.43)	0.678
		Cancer	31	1.060	(0.73-1.55)	0.765	1.77	(0.79-3.95)	0.166
		IHD/CHF	141	4.35	(3.50-5.41)	<0.001	1.06	(0.63-1.79)	0.834
		Others	141	2.58	(2.05-3.23)	<0.001	1.48	(0.86-2.56)	0.159
History of Stroke/TIA (CVA)	194 (5.5%)	All causes	110	3.03	(2.50-3.66)	<0.001	1.43	(1.09-1.87)	0.01
		Cancer	15	1.48	(0.87-2.49)	0.145	1.04	(0.46-2.31)	0.933
		IHD/CHF	26	1.77	(1.18-2.64)	0.005	1.73	(1.03-2.88)	0.037
		Others	69	2.31	(1.63-3.28)	<0.001	1.38	(0.86-2.21)	0.184

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