

Cancer audit of a urology unit from a teaching hospital in Sri Lanka – 2019

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Abstract

Introduction

Cancer data helps health care systems in many ways as they are imperative to identify true disease burden of a country, identify risk groups and to find the best way of management. More importantly, it helps to observe inter-regional variability of a cancer as genetic and epigenetic factors contributing to such diseases can vary from region to region. Developing nations are plagued with inadequate and poor-quality cancer data because nationwide healthcare data collecting systems are rudimentary. To make the matters worse, there are issues in sustaining these programs such as slowness of health care workers in accepting its importance and inadequate funding. Therefore, institution based surveys are extremely valuable to get a reflection of the real situation in such countries with regard to cancer management [1].

Methods

All the cancers treated in the urology unit of Colombo South Teaching Hospital from 01st of January to 31st of December 2019 were prospectively analysed. Data were entered using a mobile application based on AppSheet© platform. This mobile app was created by one of the authors (MDJ) in 2018, which was made accessible to the Consultant and Senior Registrars of the urology unit. Main aim of this app was to streamline and maximise the data collection of all urological cancer patients treated in the unit. Those who are authorized to access the App through their mobile devices could enter data of the cancer patients at each patient-encounter when appropriate and necessary.

Clinically relevant patient demographic details and disease specific data pertaining to stage, histological type, grade, tumour marker level and management method were recorded. Steps were taken to anonymise patient identification details. Data were uploaded during perioperative period and clinic follow up. Informed written consent for gathering data was

taken during consent for surgery. Approval for the cancer database was obtained from the Institutional Ethics Review Committee.

Data were stored in a Google sheet linked to the App via Google cloud service, which is free at present and open source. This could only be accessed by the users who have the access to the App, ensuring data security. Apart from the basic analysis which was possible through the App itself, more advanced analysis was possible by extracting pertinent data.

Results

Commonest cancer treated during 2019 was prostate cancer (Table 1). Comparatively, numbers of penile, testicular, suprarenal and upper tract urothelial cancers were small.

There were 33 patients with histologically confirmed renal carcinoma during the study period. The mean age of renal cancer was 51 years with male to female ratio of 3.1:1. Out of 33 patients, a significant number (n=12, 36.4%) were residing outside the Colombo district, where the hospital was situated. Twenty one patients (63.7%) underwent radical nephrectomy whereas the rest (n=12, 36.3%) had partial nephrectomies. Two patients (9.5%) underwent laparoscopic radical nephrectomy while the rest had open surgery. Only 3 (9.1%) patients had a low complexity RENAL nephrometry score (equal or less than 6) whereas the majority (n=19, 57.6%) had high complexity scores (more than 9). Eleven patients (33.3%) had an intermediate RENAL score (7,8 or 9).

Nearly half of the patients with renal carcinoma (n=15, 45.6%) were primarily detected following an ultrasound scan abdomen done for vague abdominal symptoms or during routine medical check-up. Haematuria was only seen in 10 patients (30.3%) although loin pain was the main complaint in 5 patients (15.1%). Primary presentation with constitutional symptoms such as loss of appetite, loss of weight and body weakness was even rarer (n= 2, 6.1%). One patient (3.0%) presented with bilateral lower limb swelling before being diagnosed with renal cell carcinoma extending to the IVC.

More than half of renal cancer patients (n=21, 63.6%) were diagnosed in AJCC TNM stage group I (Table 2). Only 3 (9.1%) patients were in stage IV and all of them were having metastatic renal cell carcinoma. As expected, clear cell renal

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carcinoma was the commonest histological variety (n=24, 72.7%). Interestingly, rare histological types such as multi loculated cystic renal neoplasm of low malignant potential, oncocytic papillary renal carcinoma and chromophobe renal cell carcinoma were detected one each (Table 2). A considerable number of patients fell into WHO/ISUP grade 3 (n=7, 21.3%) and 4 (n=8, 24.2%) categories. Although one third of patients (33.3%) had grade 2, only 4 patients (12.1%) had the most favourable grade 1.

Bladder carcinoma was diagnosed in 58 patients. Mean age of bladder cancer was 70.4 years with a male to female ratio of 10.6:1. As expected, overwhelming majority presented with haematuria (n=52, 89.6%). Meanwhile 6 patients (11.4%) with lower urinary tract symptoms were eventually detected having bladder cancer. Four patients (6.9%) had poorly differentiated urothelial carcinoma but only a single patient (1.7%) had primary squamous cell carcinoma. Not surprisingly, papillary urothelial cancer accounted for the greatest number of bladder cancers (n=50, 86.2%) (Table 3). Majority of this type were high grade (n=33, 66%) and only 17 were having low grade cancers (34%).

There was one histologically proven carcinoma in-situ (CIS) of the bladder. Sixteen patients (27.6%) had muscle invasive bladder carcinoma and two had (3.4%) metastatic disease at the time of diagnosis (Table 3). Most of the muscle invasive disease was managed with radical radiotherapy (n=11) and radical cystectomy was done only for one patient.

Prostate carcinoma was the commonest cancer encountered during the one year period. Among the 96 patients with histologically proven prostate cancer, the mean age of presentation was 72.2 years. Most of the patients had PSA levels between 10 to 100 ng/mL (n=68, 70.8%) although one third of the cohort had the range between 50 to 100 ng/mL (Table 4). Histology was mainly obtained by trans rectal ultrasound (TRUS) guided biopsy (n=93, 96.9%) and three patients (3.1%) had the histological diagnosis after trans urethral resection of the prostate (TURP). All the patients had small acinar adenocarcinomas and majority had higher Gleason grades above 7 including poorly differentiated cancers where a Gleason grade has not been assigned (Table 4). Meanwhile there were 18 patients (18.8%) with Gleason 6. Fifty six (58%) patients with prostate carcinoma belonged to ISUP grade 5.

Thirty eight patients (39.6%) had radiologically confirmed metastatic prostate cancer whereas 25 patients (26%) had local or locally advanced (non-metastatic) disease (Table 4). Commonest method of treatment offered was bilateral orchidectomy as 80 patients (83.3%) underwent this surgery alone. During 2019, only three patients underwent radical

retropubic prostatectomy. Five patients (5.1%) were offered radical radiotherapy to prostate whereas one patient (1%) underwent active surveillance.

The patient who underwent radical adrenalectomy had a high grade adrenocortical carcinoma. Among the two patients with testicular tumour, one had an undifferentiated pleomorphic sarcoma and the other had a mixed germ cell tumour with predominant embryonal component. Two cases of penile cancer had squamous cell carcinoma with one having a moderately differentiated tumour and the other one, a well differentiated cancer.

Two out of three patients with upper tract urothelial tumours underwent laparoscopic assisted nephroureterectomy whereas the other had open surgery. Two of those were situated in the distal ureter and the remaining in the kidney pelvis. All the cases were organ confined at the time of surgery (pT1 stage).

Discussion

Absence of an effective sustainable method to acquire and store cancer data is a long standing problem Sri Lanka faces along with other developing nations. This has led to scarcity of much needed research and audit pertaining to cancer in this part of the world. This in turn may translate into sub optimal care related to cancer. For an example, there is evidence that renal cell carcinoma in developing countries behave differently than their counterparts in the developed world in terms of risk factors and age of onset [2].

A significant proportion of cancer patients managed in Colombo South Hospital reside outside Colombo district. Although urological services have expanded throughout all the districts in the country, little change is seen in patient behaviour in seeking urological services in the district they reside. This has led to over burdening of long standing units and providing an acceptable urological care for the population living within the jurisdiction even more difficult [3]. Although development of trust among patients as a new unit which can provide safe urological care is a time-honoured endeavour, most such units are hampered by maldistribution of theatre time, shortage of human resources and specialized basic urological armamentarium.

According to a survey concluded in the same unit 4 years ago, mean age of renal cell cancer presentation has been 56.9 years out of which AJCC TNM stage group 1 cancer had represented only about 47.2%. Meanwhile, 38.7% of patients found their cancer as an incidental finding in ultrasound scan of the abdomen [2]. But the current study shows almost a 5-year reduction in the age of its onset and a significant increase in stage 1 presentations; nearly by 15%. Main reason for this

Table 1. Characteristics of urogenital cancers

Organ	Number	M:F	Average age
Suprarenal	1	1:0	45
Kidney	33	25:8	51.0 (34 – 73)
Upper tract urothelial	3	1:2	65.6 (58 – 78)
Bladder	58	53:5	70.4 (51 – 82)
Prostate	96	-	72.2 (51 – 86)
Penis	2	-	65.5 (64 – 67)
Testis	2	-	55.0 (25 – 85)

Table 2. Characteristics of renal cell cancer

Histology type	Number	Percentage
Clear cell	24	72.7%
Papillary type 1	2	6.1%
Papillary type 2	3	9.2%
Papillary type 1 & 2 coexisting	1	3%
Oncocytic Papillary	1	3%
Chromophobe	1	3%
Multilocular cystic renal neoplasm of low malignant potential	1	3%
WHO/ISUP grade		
1	4	12.1%
2	11	33.3%
3	7	21.3%
4	8	24.2%
Not assigned	3	9.1%
AJCC TNM stage group		
1	21	63.6%
2	3	9.1%
3	6	18.2%
4	3	9.1%

Table 3. Characteristics of bladder cancer

Histological type	Number	Percentage
Papillary urothelial cancer	50	86.2%
Poorly differentiated urothelial cancer	4	6.9%
Squamous cell cancer	1	1.7%
Spindle cell lesion (Awaiting immunohistochemistry)	1	1.7%
Papillary urothelial neoplasm of low malignant potential	2	3.4%
Stage		
Carcinoma in-situ	1	1.7%
pTa	6	10.3%
pT1	33	56.9%
pT2	16	27.6%
Metastatic	2	3.4%
Management		
Trans urethral resection of bladder tumour	38	65.5%
Radical radiotherapy	11	19%
Radical cystectomy	1	1.7%
Palliative care	2	3.4%
Yet to be decided / defaulted	6	10.3%

Table 4. Characteristics of prostate cancer

PSA range (ng/ml)	Number	Percentage
<4	3	3.1%
4 – 10	6	6.2%
10 – 20	20	20.8%
20 – 50	17	17.7%
50 – 100	31	32.3%
>100	19	19.8%
Gleason grade		
6 (ISUP 1)	18	18.8%
3+4 (ISUP 2)	10	10.4%
4+3 (ISUP 3)	3	3.1%
8 (ISUP 4)	9	9.4%
9 (ISUP 5)	29	30.2%
10 (ISUP 5)	19	19.8%
Poorly differentiated (ISUP 5)	8	8.4%
Stage		
Not determined	33	34.4%
Local / locally advance	25	26%
Metastatic	38	39.6%
Management		
Active surveillance	1	1%
GnRH analogues + Radical radiotherapy	1	1%
Radical radiotherapy	5	5.1%
Radical prostatectomy	3	3.1%
Bilateral orchidectomy + Radical radiotherapy	6	6.2%
Bilateral orchidectomy	80	83.3%

can be that more and more cancers are detected by ultrasound scan done for non-specific symptoms or routine medical checks.

According to early bladder cancer studies in Sri Lanka, nearly half of the patients had muscle invasive disease [4]. According to the current study, it is around 27% and stays within the range (21.2% to 48.4%) reported before [5]. Primary bladder carcinoma in-situ (CIS) is extremely rare in Sri Lanka [5]. The histology was reconfirmed and the patient underwent check cystoscopy after 6 weeks although no evidence of recurrence observed. Patient is lined up for intravesical therapy after multidisciplinary team meeting. Whether this is a case of a localized form of CIS which behaves less aggressively is a speculation. It may be possible that patients who had BCG vaccination at birth behaving differently in relation to CIS of the bladder [6].

Most of the patients with muscle invasive disease preferred radical radiotherapy over radical cystectomy. The only patient who underwent radical surgery was having primary bladder squamous cell carcinoma, which was locally advanced at the time of diagnosis. Although radical cystectomy is the standard of treatment for muscle invasive disease [7], in our unit majority of patients underwent radical radiotherapy.

Advanced stage of the disease with elevated serum creatinine at the time of diagnosis, advanced age, presence of significant comorbidities precluding complex surgery and patients' reluctance to accept urinary diversion are the reasons for using radiotherapy as the commonly used modality of treatment. Some of the patients who had less bulky disease and suitable for radical cystectomy defaulted and sought native treatment and later returned at an advanced stage when cystectomy was not possible.

Mean age of prostate cancer diagnosis is 72.2 years according to current study with nearly 65% presenting with Gleason grade equal or more than 8 (Table 4). Nearly 70% of patients had PSA more than 20 ng/mL. Nearly 40% of the patients were confirmed to have metastatic disease at the time of diagnosis but this figure is likely to be undervalued as some patients had incomplete data (Table 4).

This trend in prostate cancer seems to be similar to what it was in the early part of this decade [8]. Considering above facts, androgen deprivation by means of bilateral orchidectomy is still the most favoured therapy for prostate cancer patients as nearly 90% of them have undergone this alone or in combination with external beam radiotherapy (Table 4).

In countries like USA, the mean age at presentation is around 66 years with a higher proportion of low Gleason grades at the time of diagnosis [9]. Also, nearly 90% of the disease is non metastatic. Reason for this is likely to be the widespread use of serum PSA in asymptomatic men to detect early prostate cancers in the USA whereas in Sri Lanka, only opportunistic detection is practiced. However, without prospective studies to assess the long term outcome of prostate cancer patients in Sri Lanka, it is difficult to conclude whether these negative looking differences affect the longevity of the local population. Presence of more commonly found compounding factors like poorly controlled diabetes mellitus, end stage renal disease and ischaemic heart disease in the population make mere conceptualization of effects of PSA screening to be erroneous.

By introducing the electronic database, our aim was to maximise the data gathering process while making it user friendly so that more units will start collecting data related to cancers managed. So far, the new mobile App has been very efficient, user-friendly and robust. However as this was done using an App which has a server located outside Sri Lanka, there is an issue related to storing data outside the country. Although it has no serious ramifications at present, whether this could be a problem in the future with issues related to data security and protection of personal data, is unpredictable. Therefore, it may be appropriate for academic and health institutions to develop mobile applications devoid of overseas servers so that all urology units and subsequently all surgical units in the country will be empowered to audit and publish their own cancer data with minimal effort and cost. This will help to perform a national audit based on data entered by all urological and surgical units. National Cancer Control Programme can use these data to improve accuracy and completeness of the National Cancer Registry.

All authors disclose no conflict of interest. The study was conducted in accordance with the ethical standards of the relevant institutional or national ethics committee and the Helsinki Declaration of 1975, as revised in 2000.

References

1. Ravikaran A, Jayawickrama B, Arc H, Balagobi B, Sutharshan K, Abeygunasekera AM. Results of a cancer audit in a single urology unit in Sri Lanka – 2016. *Sri Lanka Journal of Urology*, 2019, 13, 37-40. <http://doi.org/10.4038/slju.v13i0.4072>
2. Balagobi B, Indika K, Samaraweera WC, Wijayarathna KN, Maddumage HP, Sutharshan K, Suvendran S, Abeygunasekera AM. Risk factors of renal cell carcinoma in a cohort of Sri Lankan patients: A case-control study. *Journal of Cancer Research and Therapeutics* 2019;15, Suppl S1:91-6 <http://10.4103/0973-1482.206867>
3. Ambegoda ALAMC, Weligamage WAS, Ishak MCM, Gobi U, Suvendiran S, Mahadeva S, Mahesh PKB, Jayawardene M. Abeygunasekera AM. A prospective study to evaluate access to elective surgical services in a urology unit of Sri Lanka. *Sri Lanka Journal of Surgery* 2018; 36(1): 5-9. <http://doi.org/10.4038/sljs.v36i1.8474>
4. Goonewardena SAS, de Silva WAS, de Silva MVC. Bladder cancer in Sri Lanka: Experience from a tertiary referral center. *International Journal of Urology* 2004; 11: 969 – 972 <https://doi.org/10.1111/j.1442-2042.2004.00930.x>
5. Sasikumar S, Wijayarathna K S N, Karunaratne KAMS, Gobi U, Pathmeswaran A, Abeygunasekera AM. Pathological Characteristics of Primary Bladder Carcinoma Treated at a Tertiary Care Hospital and Changing Demographics of Bladder Cancer in Sri Lanka. *Advances in Urology* 2016: DOI: 2016-5751647. <https://doi.org/10.1155/2016/5751647>
6. Sutharshan K, Balagobi B, Gajasinghe S, Sasikumar S, Weligamage A, Ishak M, Maddumage H, Abeygunasekera AM. Clinicopathological profile of malignancies treated in a urology unit over a period of five years. *Sri Lanka Journal of Surgery* 2016; 35: 1-5
7. Dall'Era MA, Cheng L, Pan C X. Contemporary management of muscle-invasive bladder cancer. *Expert Review of Anticancer Therapy* 2012; 12(7), 941-950. <https://doi.org/10.1586/era.12.60>
8. Abeygunasekera AM, Wijayarathna SN, de Silva K, Gobi U, Swarna S, Sujeewa W. Clinicopathological characteristics and primary treatment of prostate cancer in a urology unit of Sri Lanka. *Journal of Cancer Research and Therapeutics* 2015; 11:780-5 <http://www.cancerjournal.net/text.asp?2015/11/4/780/140839>
9. <https://www.cancer.net/cancer-types/prostate-cancer/statistics>