Chapter 17

Cancer survival in South Karachi, Pakistan, 1995–1999

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Abstract

The Karachi cancer registry established in 1995 was the first population-based cancer registry in Pakistan. Cancer registration is done by active methods. The registry contributed data on survival for selected cancers of the head and neck registered during 1995–1999. Follow-up has been carried out predominantly by active methods with the median follow-up time ranging between 29–36 months for different cancers. The proportion of histologically verified diagnosis for various cancers ranged between 98–100%; there were no cases as death certificates only (DCOs); 86–93% of total registered cases were included for survival analysis. Five-year follow-up ranged between 67–76%. The 5-year age-standardized relative survival rates was the highest for cancer of the salivary gland (44%), followed by oral cavity (40%), tongue (39%) and tonsil (3%). Five-year relative survival by age group did not display any pattern or trend and was fluctuating. A majority of cases have been diagnosed with a regional spread of disease: tongue (51%), oral cavity (53%), salivary gland (46%) and tonsil (79%) and survival decreased with increasing extent of disease for these cancers.

Karachi cancer registry

The Karachi cancer registry was the first population-based cancer registry in Pakistan. It was established in 1995 at the Sindh Government Services Hospital by the government of Sindh, and contributed data to the quinquennial IARC publication *Cancer Incidence in Five Continents* for the first time in volume VIII [1]. Cancer registration is done by active methods [2]. Over 50 sources of registration, comprising hospitals in the government and private sectors and pathology laboratories, are visited for data collection on incident cancer cases from the medical records. The registry caters to a population of about 1.7 million in 1996 with a sex ratio of 856 females to 1000 males. The average annual age-standardized incidence rate is 139 per 100 000 among males and 169 per 100 000 among females with a lifetime cumulative risk of one in 6 of developing cancer for both sexes in the period 1995–1997 [2]. The top-ranking cancers among males are lung followed by oral cavity and larynx. Among females, the order is breast, ovary and oral cavity.

The registry has contributed data on survival from selected cancers of the head and neck registered during 1995–1999 for the first time in this volume of the IARC publication on *Cancer Survival in Africa, Asia, the Caribbean and Central America*.

Data quality indices (Table 1)

The proportion of cases with histologically verified cancer diagnosis in the series varied between 98–100%. No cases were registered on the basis of a death certificate only (DCO). The exclusion of cases owing to the non-availability of any follow-up information is 7%, ranging from 9% in cancer of the tonsil to 7% for oral cavity. Thus, 86–93% of the total cases registered are included in the estimation of the survival probability.

Outcome of follow-up (Table 2)

Follow-up has been carried out predominantly by active methods. These included abstraction of cancer mortality information from death certificates. The abstracted data are matched with the incident cancer database. Unmatched incident cases are then subjected to repeated scrutiny of records in the respective sources of registration and postal/telephone enquiries to obtain the vital status information.

The closing date of follow-up was 31st December 2003. The median follow-up ranged from 29 months for cancer of the oral cavity to 36 months in tongue cancer. Complete follow-up information at five years from the incidence date ranged between 67–76%. The losses to follow-up are spread over all the time intervals from incidence date, from <1 year to >5 years. This minimizes the bias of estimation of survival probability in the respective years from the incidence date.

Survival statistics

All ages and both sexes together (Table 3)

The 5-year relative survival is the highest for cancer of the salivary gland (46%), followed in order by oral cavity (38%), tongue (37%) and tonsil (31%).

The 5-year age-standardized relative survival (ASRS) probability for all ages together was greater than the corresponding unadjusted one in cancers of the tongue, oral cavity and tonsil; this was reversed for cancer of the salivary gland. The 5-year ASRS (0–74 years of age) is less than the corresponding ASRS (all ages) for most cancers.

Sex
Male (Table 4a)

The 5-year relative survival was the highest for cancer of the salivary gland (45%), and the lowest was tongue cancer (25%). Survival from cancers of the oral cavity and tonsil is noticeably higher among males than females.

Female (Table 4a)

The top ranking cancer on 5-year relative survival was the tongue (52%), and the lowest in the ranking was tonsil (16%). Survival was markedly higher among females than males in cancer of the tongue.

Age group (Table 4b)

The 5-year relative survival by age group did not display any pattern or trend and was observed to fluctuate with increasing age groups.

Extent of disease (Table 5; Figure 1)

A majority of cases have been diagnosed with a regional spread of disease: tongue (51%), oral cavity (53%), salivary gland (46%) and tonsil (79%). Cases diagnosed with distant metastasis were negligible. Localized stage cancers are the least common among cancer of the tonsil (13%), while in the rest it ranged between 33-38%. The extent of disease was unknown in 8–22%. The 5-year absolute survival by extent of disease followed the expected pattern: highest for localized cases, followed by regional and distant metastasis cases among known categories of extent of disease.

References

1. Parkin DM, Whelan SL, Ferlay J and Storm H. *Cancer Incidence in Five Continents, Vol I to VIII: IARC Cancerbase No. 7*. IARCPress, Lyon, 2005.

2. Bhurgri Y, Bhurgri A, Hassan SH, Zaidi SH, Rahim A, Sankaranarayanan R, Parkin DM. Cancer incidence in Karachi, Pakistan: first results from Karachi Cancer Registry. *Int J Cancer*. 2000; 85(3): 325–329.

Figure 1. Absolute survival (%) from selected cancers by extent of disease, South Karachi, Pakistan

Figure 1a. Tongue

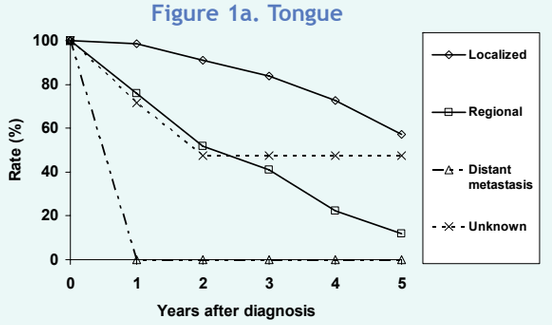

Figure 1c. Salivary gland

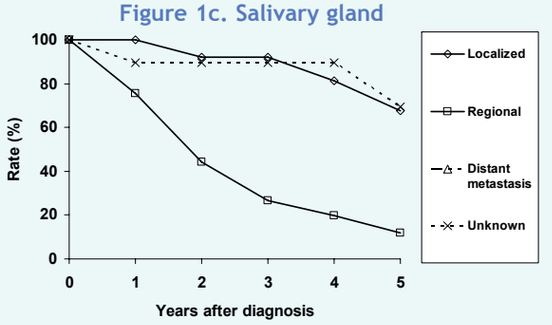

Figure 1b. Oral cavity

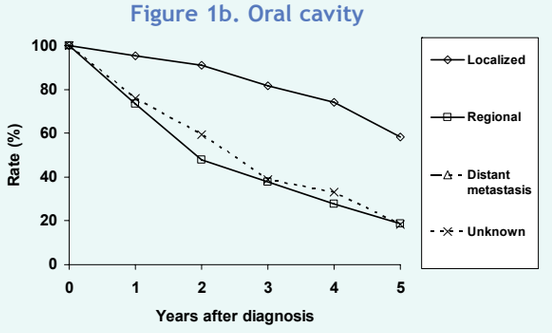

Figure 2d. Tonsil

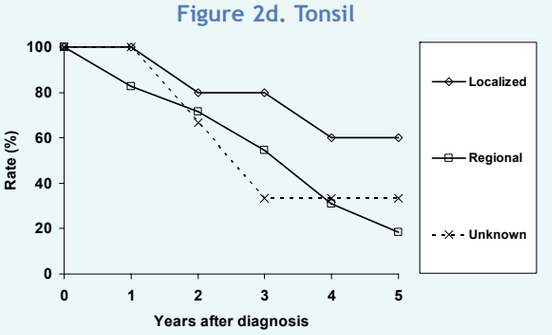

Table 1. Data quality indices - Proportion of histologically verified and death certificate only cases, number and proportion of included and excluded cases by site: South Karachi, Pakistan, 1995–1999 cases followed-up until 2003

Site	ICD-10	Total registered	%		Excluded cases					Included cases	
			HV	DCO	DCO	Follow-up	Others	Total	%	No.	%
Tongue	C01-02	196	99.5	0.0	0	16	0	16	8.2	180	91.8
Oral cavity	C03-06	443	98.4	0.0	0	30	0	30	6.8	413	93.2
Salivary gland	C07-08	51	98.0	0.0	0	3	2	5	9.8	46	90.2
Tonsil	C09	44	100.0	0.0	0	4	2	6	13.6	38	86.4

HV: histologically verified; DCO: death certificate only

Table 2. Number and proportion of cases with complete/incomplete follow-up (in years) and median follow-up (in months) by site: South Karachi, Pakistan, 1995–1999 cases followed-up until 2003

Site	ICD-10	Cases included	Complete FU		Incomplete FU: lost to FU						% with complete FU at 5 years	Median FU (in months)
			Alive/dead at end of FU				% lost to FU: years from diagnosis					
			No.	%	No.	%	< 1	1-3	3-5	> 5		
Tongue	C01-02	180	123	68.3	57	31.7	8.3	4.4	15.6	3.4	71.7	35.6
Oral cavity	C03-06	413	294	71.2	119	28.8	5.8	11.1	8.7	3.1	74.3	29.5
Salivary gland	C07-08	46	26	56.5	20	43.5	8.7	10.9	13.0	10.9	67.4	32.7
Tonsil	C09	38	29	76.3	9	23.7	5.3	10.5	7.9	0.0	76.3	35.5

FU: follow-up

Table 3. Comparison of 1-, 3- and 5-year absolute and relative survival and 5-year age-standardized relative survival by site: South Karachi, Pakistan, 1995–1999 cases followed-up until 2003

Site	ICD-10	Cases included	% Absolute survival			% Relative survival			% ASRS at 5-years	
			1-year	3-year	5-year	1-year	3-year	5-year	all ages	0-74 years
Tongue	C01-02	180	83.8	58.7	32.9	85.5	62.5	36.8	39.4	39.3
Oral cavity	C03-06	413	81.8	54.9	34.8	83.2	58.0	38.2	39.9	40.9
Salivary gland	C07-08	46	86.4	60.6	41.6	88.4	64.8	45.7	44.4	43.0
Tonsil	C09	38	86.5	56.4	26.9	88.9	61.2	31.0	33.6	32.3

ASRS: age-standardized relative survival

Table 4a. Site-wise number of cases, 5-year absolute and relative survival by sex: South Karachi, Pakistan, 1995–1999 cases followed-up until 2003

Site	ICD-10	Cases included	Male			Female		
			% 5-year survival			% 5-year survival		
			No.	Abs	Rel	No.	Abs	Rel
Tongue	C01-02	180	91	22.4	25.1	89	46.3	51.6
Oral cavity	C03-06	413	250	39.4	43.2	163	28.4	31.1
Salivary gland	C07-08	46	28	39.9	44.8	18	43.9	46.9
Tonsil	C09	38	27	29.7	33.9	11	12.9	15.5

Abs: absolute survival; Rel: relative survival

Table 4b. Site-wise number of cases and relative survival by age group: South Karachi, Pakistan, 1995–1999 cases followed-up until 2003

Site	ICD-10	Cases included	Number of cases by age group					Relative survival by age group % 5-year survival				
			< 45	45-54	55-64	65-74	> 75	< 45	45-54	55-64	65-74	> 75
Tongue	C01-02	180	53	32	46	40	9	25.4	48.9	40.6	36.9	43.7
Oral cavity	C03-06	413	136	114	76	64	23	29.5	44.9	48.8	34.1	32.5
Salivary gland	C07-08	46	16	10	7	11	2	43.5	80.1	19.2	45.7	
Tonsil	C09	38	7	6	12	8	5	34.1	50.3	0.0	51.2	45.2

Table 5. Proportion of cases and 5-year absolute survival by extent of disease and site: South Karachi, Pakistan, 1995–1999 cases followed-up until 2003

Site	ICD-10	Cases included	% of cases by extent of disease				% 5-year absolute survival			
			Localized	Regional	Dist. met.	Unknown	Localized	Regional	Dist. met.	Unknown
Tongue	C01-02	180	37.8	50.6	0.6	11.0	57.4	11.7	0.0	47.6
Oral cavity	C03-06	413	36.3	53.0	0.5	10.2	58.3	18.6		18.3
Salivary gland	C07-08	46	32.6	45.7	0.0	21.7	67.6	12.0		69.6
Tonsil	C09	38	13.2	78.9	0.0	7.9	60.0	18.5		33.3

Dis. met.: distant metastasis