THE PATTERN OF MALIGNANT TUMOURS IN NORTHERN PAKISTAN

Pages with reference to book, From 270 To 273

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ABSTRACT

A retrospective study of 14,018 malignant tumours from northern Pakistan is presented. The data reflects the pattern of cancer distribution in this region. Among males most common sites are Iymphnode, leukemia, skin, prostate, colorectal, bone and stomach and in females breast, skin, ovary, leukemia, gall-bladder, thyroid and bone. The distribution of malignant tumours in various districts of northern Pakistan and different ethnic groups like Pathans, Punjabis and Urdu speaking have also been outlined. Age standardized cancer ratio (ASCAR) was calculated to compare the data from the neighbouring countries of the region. Prostatic cancer in males and gall-bladder carcinoma in females is more frequent in our material as compared to other countries of the region. Comparison of the pattern of malignant tumours in North and South has also been highlighted (JPMA 41: 270,1991).

INTRODUCTION

Information regarding geographical distribution of cancer is important in order to understand the causation of cancer. In developed countries, incidence of cancer is derived from population based statistics collected by tumour registries. However, in developing world such comprehensive data is not available due to almost nonexistance of such organizations. As half of the annual new cases of cancer occur in developing countries[1], acquisition of this data is essential. When the population from which these cases are derived is unknown, the rates of incidence cannot be calculated. The data must therefore, be presented as relative frequency. There are a number of difficulties in interpreting such data[2], but nevertheless, it is essential and indispensable in completing the global picture of cancer distribution. We present data collected over 12 years (1977-1988) at Armed Forces Tumour Registry located atArmed Forces Institute of Pathology (AFIP), Rawalpindi, which is a reference laboratory for Armed Forces. Apart from some material from army personnel, it receives the vast majority of its biopsies from civilian patients from all over northern Pakistan (Figure).

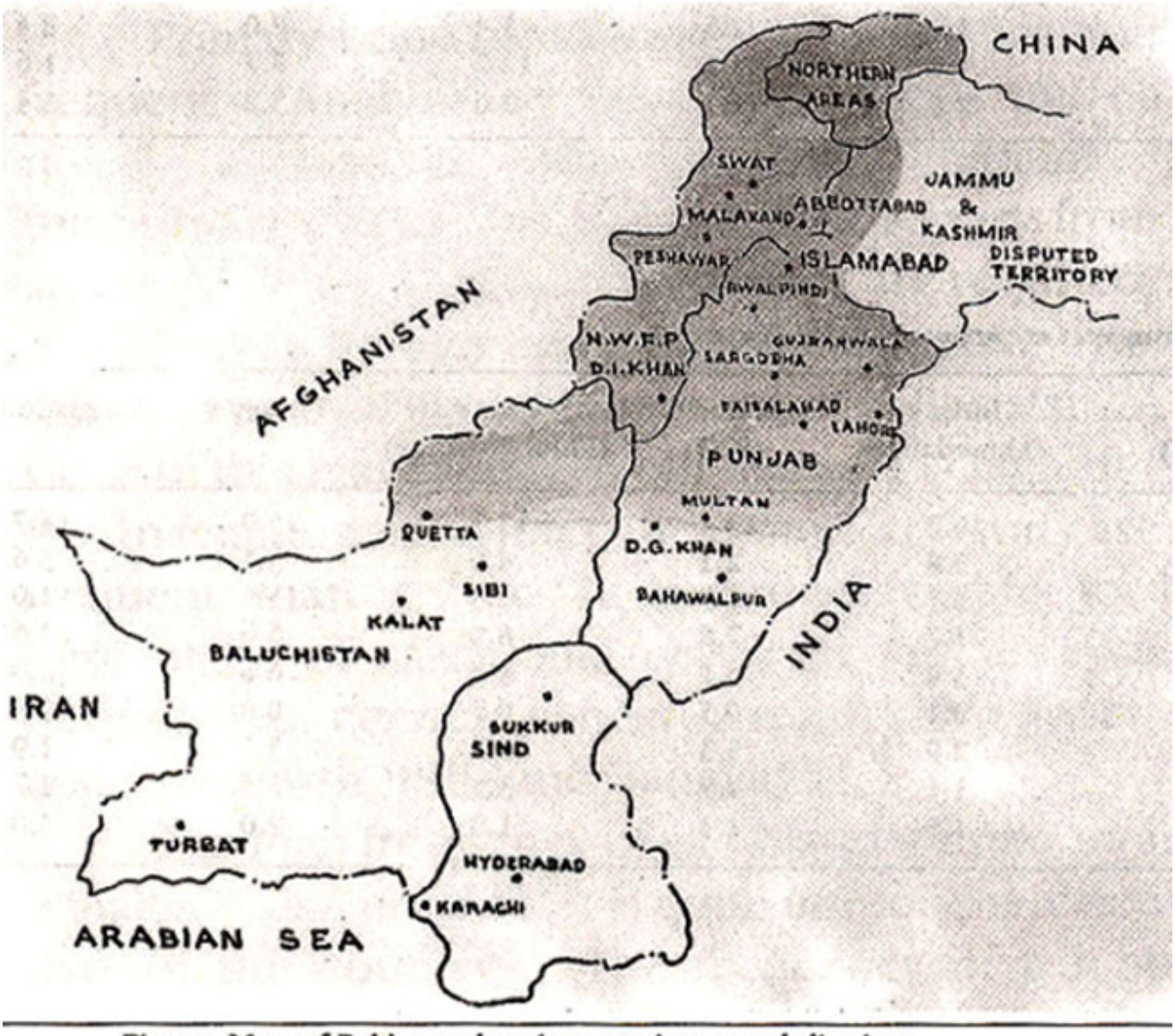

Figure. Map of Pakistan showing provinces and districts. Shaded region represent area of study.

This is the largest number of biopsy proven cases reported from a single institution in Pakistan. The material is based on relative frequency data. It carries all the constraints inherent in such statistics. However, it does provide some basic information which will be of help in planning further research in this field.

MATERIAL AND METHODS

The material was referred to AFIP Rawalpindi from various military and civilian institutions. Histologically verified cancer cases were registered with the registry. The information recorded includes name, age, sex, birth place, duration of symptoms, site, histology and place of longest stay. Each bit of information was numerically coded. Tumour site and histology was coded according to international classification of diseases for oncology (ICD- O) [3]. The datawas analyzed by apersonal computer utilizing dbase III plus package. The patients were divided into eight groups according to their age. In addition to relative frequency, age standardized cancer ratio (ASCAR) was calculated[4].

The population standards of developing countries, as reported by Parkin (1984)4 were used.

RESULTS

For the period 1977-1988, 14,018 cases of malignant tumours (8,112 males and 5906 females) were registered. Only 6.68% were soldiers.

TABLE I. Ten commonest malignant tumours.

	Male (N:8112)			Female (N:5906)		
S.No.	Site	ICD-O	Percentage	Site	ICD-O	Percentage
1.	Lymphnode (NHL*+HD)	196	9.62	Breast	174	26.60
2.	Leukaemia	169	9.09	Skin	173	5.63
3.	Bronchus	162	7.21	Ovary	183	4.83
4.	Skin	173	6.67	Leukaemia	169	4.53
5.	Prostate	185	6.63	Cervix	180	4.20
6.	Colorectal	153-54	5.54	Lymphnode (NHL*+HD)	196	3.69
7.	Urinary bladder	188	4.37	Colorectal	153-54	3.45
8.	Bone	170	3.80	Gall bladder	156	3.42
9.	Stomach	151	2.76	Thyroid	193	3.06
10.	Soft tissue	171	2.46	Bone	170	2.31

*NHL - Non-Hodgkin's Lymphoma, H.D. - Hodgkin's Disease.

Table I shows the distribution of ten commonest malignant tumours for each sex. In males, the most frequent cancer site was lymphnode (lCD 196) 9.65% followed by leukemia (ICD 169) 9. 10%, lung (ICD 162) 7.21%, skin (lCD 173) 6.68%, prostate (lCD 185) 6.63%, colorectal (lCD 153-4) 5.54%, urinary bladder (ICD 188) 4.37%, bone (ICD 170) 3.79%, stomach (lCD 151) 2.76% and soft tissue (lCD 171) 2.46%. In females, breast cancer (lCD 174) was the most common tumour (26.63% of the total) followed by skin (lCD 173) 5.63%, ovary (lCD 183) 4.92%, leukemia (lCD 169) 4.53%, cervix (lCD 180) 4.20%, lymphnode (lCD 196) 3.69%, colorectal (lCD 153-4) 3.45%, gall bladder (lCD 156) 3.42%, thyroid (lCD 193) 3.06% and bone (lCD 170) 2.31%. It was seen that 7.11% of the cancers in males and 4.45% of those in females (5.99% of all cases) occurred in children (under 15 years). A separate analysis of most commonly occurring paediatric neoplasms is shown in Table II.

TABLE II. Ten commonest malignant tumours in paediatric age group (<15 years).

	Male (N:577)			Female (N:263)		
S.No.	Site	ICD-O	Percentage	Site	ICD-O	Percentage
1.	Leukaemia	169	35.18	Leukaemia	169	35.36
2.	Lymphnode (NHL+HD)	196	23.91	Lymphnode (NHL+HD)	196	15.96
3.	Bone	170	5.54	Bone	170	8.36
4.	Kidney	189	4.50	Kidney	189	5.32
5.	Eye	190	4.50	Soft tissue	171	5.32
6.	Soft tissue	171	2.59	Eye	190	4.18
7.	CNS	191-92	2.25	CNS	191-92	3.42
8.	Liver	155	1.55	Liver	155	1.90
9.	Colorectal	153-54	1.38	Thyroid	193	1.52
10.	Testis	186	1.21	Skin	173	1.14

Leukemia is the most frequent childhood tumour in both sexes, followed bylymphoma (lCD 196), bone (lCD 170), kidney (lCD 189), eye (lCD 190), soft tissue (lCD 171) and nervous system (lCD 191.2). Lymphoblastic leukemia was the predominant type. Among lymphoid neoplasia cases in childhood, ratio of non-Hodgkin's lymphoma to Hodgkin's disease was 2:1. A significant proportion comprised of Burkitt's lymphoma. Analysis of duration of symptoms revealed that about 60% cases (63.69% males and 58.3% females) reported to the hospital within six months of their illness. However, there were 28.26% males and 33.08% females who reported after one year or more. A significant feature was that 26.31% cases of skin and 21.6% cases of soft tissue sarcomas reported after 18 months or more of their illness. Among gall-bladder and thyroid malignancies, this figure was 20.28% and 31.11% respectively. In our study, brain tumours in Peshawar district, skin malignancies in Mad Kashmir, prostate carcinoma in Gujrat and cancer of oral cavity in Lahore district were more frequent. Similarly Pushto speaking population in our data showed a higher frequency of brain, oesophageal and gastric tumours. Among females of Urdu speaking population, cancer of oral cavity was more common.

TABLE III. Comparison of ASCAR values of selected tumours at various centres (male).

	Pakistan (AFIP)	Pakistan $ (JPMC)	India # (Banglore)	India # (Chandigarh)	India # (Ahmedabad)	Iran # (ICO)*	Iran # (FARS Province)	Turkey #	Bangladesh #
Lymphnode	9.9	6.3	6.4	7.5	3.9	6.8	8.4	6.2	4.1
Leukaemia	7.91	-	2.6	4.2	3.6	2.0	5.5	-	1.5
Bronchus	8.84	16.8	5.0	13.2	11.8	4.3	11.2	8.5	18.4
Prostate	9.09	-	3.7	2.9	1.6	1.9	3.7	3.4	0.3
Colorectal	5.90	-	5.2	5.8	3.9	4.0	3.5	5.2	1.1
U/bladder	5.3	3.1	3.0	4.2	1.9	7.3	10.0	3.4	1.2
Bone	3.12	-	1.7	1.1	1.4	1.8	1.4	2.0	2.4
Stomach	3.10	-	10.5	3.6	1.5	11.2	12.7	7.7	1.6
Soft tissue	2.48	-	1.8	2.7	2.0	1.1	2.6	3.2	1.4

*= Iranian Cancer Organization
Data Source = # = (4), $ = (8)

TABLE IV. Comparison of ASCAR values of selected tumours at various centres (Female).

	Pakistan (AFIP)	Pakistan $ (JPMC)	India # (Banglore)	India # (Chandigarh)	India # (Ahmedabad)	Iran #* (ICO)	Iran # (FARS Province)	Turkey #	Bangladesh #
Breast	25.33	19.0	12.8	9.9	16.7	13.1	15.3	25.0	14.7
Ovary	4.59	4.2	3.9	2.4	3.8	2.1	4.6	3.5	3.6
Leukaemia	4.52	-	2.2	2.2	3.7	1.5	4.4	-	1.0
Cervix	4.63	8.3	24.8	41.5	21.7	7.8	8.9	5.6	23.6
Colorectal	3.91	-	3.4	2.6	3.4	5.1	4.4	6.6	0.9
Gall bladder	4.71	-	-	1.8	0.1	0.5	0.7	0.8	0.3
Lymphnode	3.99	2.8	1.8	1.7	2.9	5.3	8.6	5.7	1.9
Thyroid	3.08	-	2.1	1.1	1.1	4.9	3.5	2.5	1.7
Bone	2.14	-	1.5	1.0	1.5	1.2	1.0	2.0	3.0

* = Iranian Cancer Organization
Data Source = # = (4), $ = (8)

Tables III and VI compare the age standardized cancer ratio (ASCAR) for ten commonest tumours in Northern Pakistan with data from neighbouring countries India, Iran and Turkey and from other developing countries like Bangladesh.

DISCUSSION

Environmental factors play a significant role in causation of cancer. Itis important to know the pattern of cancer distribution in a specific geographical location. The information about prevalence of malignant tumours in Pakistan, especially in North, is at best sketchy. This relative frequency data does provide some indication about the prevalence of various types of cancers in this region. The relative frequency of malignant tumours have increased over the years. It may be because of better health care and diagnostic facilities. Among males, a number of tumours like lymphomas, colorectal carcinoma, skin and bone tumours appear to be more frequent in our material. These tumours are not that frequent in other parts of the country, especially in the South[5,8]. The lymphoid neoplasia have always been high in ranking in our material. The most striking feature is the high ASCAR value of prostate carcinoma in this study. This tumour is seen infrequently among all centres within Pakistan[5,8]. The frequency of prostatic carcinoma is very low among other neighbouring countries like India, Iran, Turkey and Bangladesh[4]. In our material this tumour was included among ten commonest tumours in all districts. However, its frequency is highest in Gujrat district. No specialized institution is present in this area and no effort was made to acquire these cases. It would be worthwhile to study the possible contributing factors incriminated in the high frequency of this cancer in the region. Primary bone tumours are also significant in their frequency. Analysis of data from across the country reveals a possible south to north gradient[5]. Bone tumours are less frequently seen in the reports from India and Iran4. More studies in this regard are required. Among females carcinoma breast remains the most frequent tumour like all other centres in Pakistan[5]. ASCAR value of this malignancy in our material is highest (Table IV). In female genital tract, the tumours of ovary are more frequent than cervix. It is probably due to lower percentage of carcinoma cervix in our material. The frequency of cervical cancer is remarkably lower when compared with India and Bangladesh[4]. The high frequency of gall-bladder tumours among females is also notable. It is quite infrequent in southern part of the country[5,8]. The frequency of gall-bladder tumour is quite low (ASCAR < 1) in most of India, Iran, Turkey and Bangladesh. In majority of our cases, malignancy was not suspected preoperatively. More studies are in progress in this regard[6]. Primary bone tumours and thyroid cancers are also more frequent as compared to other countries (Table III and IV). Leukemia and lymphomas constitute more than half of all paediatric tumours, more so in males than in females. This proportion is more than what is seen in Karachi[7]. Brain and eye

tumours and soft tissue tumours on the other hand are far less. The significance of these differences needs to be determined. Although there are some significant differences in frequency of tumours in various districts, the occurrence of many tumours especially lymphoma, breast, skin, colorectal, bronchus, cervix and gall bladder in nearly all places is notable. Thyroid tumours are frequent in some parts like Jhelum, Azad Kashmir, Hazara and Sialkot. Tumour of brain in NWFP and prostatic cancer in Gujrat are significantly high. It is difficult to draw definite conclusion from these figures. However, they should be noted for planning further studies. The pattern of tumours in the data shows a number of interesting features. While it confirms some generally known facts like high prevalence of breast, lung, ovary and cervical cancers, there are indications that some tumours may be more common in this region. These include lymphomas, skin, bone, gall bladder and prostate tumours. In fact frequency of prostate and gall bladder tumours is highest when compared with that from other countries of the region. Similarly high frequency of colorectal carcinoma is also notable. It would be worthwhile to plan further studies in this regard.

REFERENCES

1. Parkin, D.M., Stjemsward, J., Muir, C.S. Estimates of theworidwide frequency of twelve major cancers. Bull. WHO., 1984;62:163.
2. Doll, R. Comparison of cancer incidence; statistical aspects, in cancer in Africa. Edited by Clifford, P., Linsell, C.A. and Timmas, G.L Nairobi, E. African Publishing House, 1968, p. 105.
3. Percy, C. and Holten, V. International classification of disease for oncology (ICD-O). Field trial edition. Lyon: International Agency for research on cancer. May. 1988.
4. Parkin, D.M. ed. Cancer occurrence in developing countries. IARC scientific publicstion No.75, Lyon: IARC, 1986, p.163.
5. Pakistan Medical Research Council. Malignant tumours. Report of multicentre study. Karachi, PMRC, 1982, p.3.
6. Mubarik, A., Ahmad, M., Khan, A.H. and Mansoor, A. Carcinoma gallbladder. Astudy of 112 consecutive cases. Pakistan Armed Forces Mcd. J., 1990;53:1.
7. Zaidi, S.H.M. and Jafarey, NA. Childhood tumours in Karachi. JPMA., 1977;27:346. & Jafarey, N.A. and Zaidi, S.H.M. Cancer in Pakistan. JPMA., 1987;37:178.