

RESEARCH COMMUNICATION

Cancer Data Analysis in the Pathology Department, Combined Military Hospital, Multan, Pakistan 2002-2007

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Abstract

This study was conducted with the objective of providing the pattern of cancer distribution from a hospital based tumour registry at CMH, Multan, in comparison with patterns from other National Studies. The retrospective study of malignant tumours recorded at the pathology department from 2002-2007 featured analysis in terms of age group, gender and type of tumour. Over the six year period the total number of malignancies was 930 with a male to female ratio of 1.4:1. The common tumours in males, in order of decreasing frequency were leukaemia, prostate cancer, urinary bladder cancer, skin cancer and lymphomas. In females they were leukaemia, breast cancer, skin cancer, gallbladder cancer and lymphomas. In both sexes, the most common malignancy was leukaemia, which is contrary to other studies, pointing to a possible link with extensive use of pesticides and other agricultural chemicals in this region of the country.

Key Words: Cancer - Pakistan regional comparison - leukaemia - pesticides

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Introduction

Cancer is leading cause of morbidity and mortality especially in the developing countries where facilities for early diagnosis are not available (Pal and Mittal, 2004). There are various methods in use to record data for cancer. For this a tumour registry is mandatory. The optimum is the population based tumour registry, which reflects the data based on unselected patients. On the other hand an institution / hospital based tumour registry is an important method which can verify cancer clustering and provide useful information for research and help physicians to determine the results of different cancer treatment (Gress 2002).

Information regarding the geographical distribution of cancer is important to understand type and etiology. In the developing countries like Pakistan where population-based data are limited, inference can be drawn from pathology-based cancer data (Bhurgri et al 2002). This does not provide a comprehensive picture, but is essential in completing the global picture of cancer distribution. We here present a data collected over six years period in the pathology department of CMH, Multan comparing with other national and international data. We not only receive samples from our own hospital but also from other institutions i.e. Nishtar Medical College and Children Hospital Complex. It is not a very large study; however it will provide useful information about the relative frequency of cancer in this region of the country.

Materials and Methods

This was a retrospective study confined to consecutive biopsy specimen received at the pathology department of CMH, Multan. The period of study spanned over the six years from 2002-2007. Haematological malignancies were included from our Haematology department for four years i.e. Jan 2005 to May 2008 as previous records were not available. Clinical notes were obtained from the history files of patients including their personal data, clinical presentation and type of biopsy.

The tissues were routinely processed to paraffin blocks and 3-5 um sections were prepared and stained with haematoxylin and eosin. Bone marrow aspirations were done from posterior superior iliac spine with the help of LP needle of 18 gauge. Trephine biopsies were done with Jamshidi's needles. The biopsies were decalcified overnight in 1 % nitric acid and subsequently processed as like other biopsy specimen. The slides were examined by consultants and cases requiring special stains, immunohistochemistry or second opinion were referred to AFIP Rawalpindi. Total malignant tumours were calculated in each year. These were then separated according to gender and age distribution.

The results were compiled and compared with five other studies from National Data i.e. AFIP (two studies), Combine Military Hospital, Lahore, Karachi cancer registry and IRNUM, Peshawar and also compared with international data.

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Results

During the six years period, a total of 11,580 cases were received and out of these malignancies were 930, making 8.03 percent. The number of male patients was 552 making a male to female ratio of 1.4:1.

The age distribution showed that peak was between 50-70 years age group. Tables 1 and 2 show the distributions of the ten commonest malignancies in each sex in comparison with other studies. The commonest malignancy was leukaemia in both sexes followed by prostate, urinary bladder, skin and lymph nodes in males and breast, skin, gall bladder and lymph nodes in females.

Discussion

In our study the age range, which was most commonly affected with cancer, was fifth and sixth decades of life, however a significant number of cases were in the first and second decades. Especially leukaemia was most prevalent in the childhood as also seen in the other series of childhood cancers (Zaidi and Jaffery, 1977; Jamal et al., 2006). As in most of the studies males are affected more commonly than females (Jaffery and Zaidi, 1987, Khan and Gilani, 1996) except for a study from Karachi (Bhurgri et al., 1999) and Madras (Shanta et al., 1994).

Coming to relative frequency of tumours, to our surprise we found Leukaemia to be on the top of list both in males and females. Multan district is famous for its crops i.e. cotton, wheat, mangoes etc. For this there are manufacturing plants and extensive use of pesticides and fertilizers. These are causing pollution of water reservoirs

and also affect the handlers. The Leukaemias especially i.e. ALL has been found to be common in children born to the parents involved in pesticide handling. (Sandler and Rols 1997; Zahm and Ward 1998). This could have been a reason for this tumour to be at top in this region.

Next cancer in frequency in male was that of prostate. This cancer gained higher position in ranking from fifth to first and from more than tenth position to eighth in two series from IRNUM. The reason could be the development of TURP technique (Fang and Ye 2004) and availability of PSA (Prostate Specific Antigen) for screening of population with enlarged prostate. However, this tumour is not that common in other regions from Pakistan (Bhurgri et al., 1999; 2002a; 2002b).

Transitional cell carcinoma of urinary bladder was third commonest cancer in male. This cancer has been found to be linked with cigarette smoking, (Rafique and Abrar 2006). This is at similar place in a study from Lahore, Karachi cancer registry and IRNUM but lower in ranking from studies at AFIP.

Among females the breast cancer was at the second position, which is different from most of the national, and international studies where it was at the top position. Carcinoma gall bladder was fourth in female cancers. This was at eighth and ninth position from studies at AFIP and did not occupy top ten places in any other national study. The high prevalence of gall stones could be the major etiological factor (Bhurgri and Asif 1995). Cancer of thyroid was at seventh place in our study. It occupied 4th place in a study from Lahore (Atique and Waheed 2006), ninth in a study from AFIP (Ahmad et al., 1991) but did not occupy one of the top ten tumour from Karachi Cancer

Table 1. Rank Order of the Ten Commonest Tumours at CMH Multan in Comparison with Other Reports (Males)

Sr. No.	CMH, Multan	CMH, Lahore	*A.F.I.P. 77-88	*A.F.I.P. 1992-2001	** KCR	***IRNUM-96
1.	Leukaemia	Prostate	Lymph node	Prostate	Lung	Skin
2.	Prostate	Prostate	Lymph node	Prostate	Lung	Skin
3.	Urinary bladder	Lymph node	Leukaemia	Skin	Oral cavity	Lymph node
4.	Skin	Urinary bladder	Bone	Lymph node	Laryngeal	Oral cavity
5.	Lymph node	Skin	Skin	Leukaemia	Urinary bladder	Urinary bladder
6.	Colorectal	Soft tissue	Prostate	Urinary bladder	Lymph node	Lungs
7.	Lungs	Liver	Colorectal	Colorectal	Colorectal	Oesophagus
8.	Larynx	Colon	Urinary bladder	Bone	Prostate	Soft tissue
9.	Kidney	Kidney	Bone	Lung	Oesophageal	Prostate
10.	Stomach	Bone	Stomach	Stomach	Liver	Brain

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Table 2. Rank Order of the Ten Commonest Tumours at CMH Multan in Comparison with Other Reports (Females)

Sr. No.	CMH, Multan	CMH, Lahore	*A.F.I.P. 77-88	*A.F.I.P. 1992-2001	** KCR	***IRNUM-96
1.	Leukaemia	Breast	Breast	Breast	Breast	Breast
2.	Skin	Uterus	Skin	Skin	Oral cavity	Skin
3.	Gall bladder	Lymph node	Ovary	Leukaemia	Ovary	Ovary
4.	Lymph node	Thyroid	Leukaemia	Ovary	Leukaemia	Oral cavity
5.	Colorectal	Skin	Cervix	Colorectal	Oesophagus	Oesophagus
6.	Oral cavity	Ovary	Lymph node	Lymph node	Lymph node	Cervix
7.	Thyroid	Cervix	Colorectal	Liver	Prostate	Lymph node
8.	Ovary	Urinary bladder	Gall bladder	Cervix	Oesophagus	Uterus
9.	Cervix	Liver	Thyroid	Gall bladder	Liver	Leukaemia
10.	Uterus	Soft tissue	Bone	Liver	Pharynx	Soft tissue

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Registry or IRNUM. Among the female, genital tract cancers of the ovary were at the top followed by cervix and uterus. Where as study from Lahore showed uterus to be at top followed by ovary and cervix. In all the rest of studies the ovarian cancer was at the top followed by cervix whereas cancer of uterus did not occupy the top ten places in studies from AFIP and KCR. Skin cancers were next in ranking in both sexes, which is true for all the other studies. Lymph node cancers were also quite common in both sexes. This is true for most of the national studies. Colorectal cancer and cancers of oral cavity and stomach were also among the top ten tumours in both the sexes.

We can conclude that this analysis and its comparison with other studies showed some significant features. There was high prevalence of leukaemia, which was different from all the other studies, and further study to evaluate a possible link with pesticides is strongly recommended. Immediate steps to decrease the exposures to such pesticides be taken. High prevalence of breast carcinoma as in other national and international studies is confirmed. Urinary bladder cancer is also very high; again there could be a possible link with cigarette smoking. Variation in rest of the tumours may be department / institution biased, like the data from IRNUM may be biased towards radiosensitive tumour. Again as point to be stressed is the great deficiency of population based tumour registries. So efforts are required at govt levels for establishment of population based tumour registries.

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