Original Article

The pattern and distribution of malignancies reported in Hadramout, Yemen - 2006

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Abstract

Objectives: To describe the pattern of malignancies among all patients with cancer recorded in Hadramout (East of Yemen) in 2006, and to explore the association with age, sex, and site of cancer.

Methods: A retrospective descriptive study of all registered cancers (334) was carried out. Efforts were made to avoid case duplication. The neoplasms had been classified according to international classification of diseases for oncology.

Results: The cancers were more frequent in females (55%) than males (45%). The three most affected sites were digestive organs (20.35 %), breast (14.37 %), and haematopoietic system (11.98 %). In the paediatric group, haematopoietic system (leukaemia) was most common.

Conclusions: Digestive organs in general, with breast in females, were the most frequent sites of malignancies. Colorectal cancers were the most common cancers in digestive organs (JPMA 59:774; 2009).

Introduction

Cancer is still one of the major health problems worldwide with increasing frequency, especially with increased modernization, increased exposure to radiation and predisposition to large number of carcinogenic agents.[1]

In 2004, cancers accounted for over 7 millions deaths (13% of total mortality) and there were more than 10 million new cases worldwide. More than 60% of cancer deaths and approximately half of new cases occurred in developing regions.[2,3]

Profound demographic, socioeconomic, and behavioral changes have taken place in Eastern Mediterranean Region over the past three decades. Longevity has progressively increased, and there has been steady shift from traditional and rural ways of life to more urbanized and modern lifestyle. With modernization, life styles linked with physical inactivity, smoking, and new eating habits have emerged which promote non communicable diseases, including cancer.[4]

There is a significant variation in the distribution of site-specific cancer mortality and incidence by region.[3] In India the genital tract cancers are the largest overall group of cancers.[5]

In Saudi Arabia, gastrointestinal tract malignancies are the commonest type of cancers followed by Hodgkins disease, Nonhodgkin lymphoma, and thyroid cancer.[6]

The republic of Yemen lacks a national cancer registry and there are no reliable data available. However if we consider the WHO recommendation for estimating cancer incidence (100 per 100000 for countries with more than half of the population under 20 years of age), the number of new cases in Yemen should be around 16000 annually.[7]

Many studies conducted in Yemen revealed that the commonest type of cancer was gastrointestinal tract malignancies followed by lymph node cancer and head and neck malignant tumours.[7-9]

The aim of this study is to describe the pattern of malignancies among all patients with cancer recorded in Hadramout, 2006, and to explore association with age, sex, and site of cancer according to the international classification of disease (oncology).

Methodology

This retrospective descriptive study was carried out in Hadramout governorate at east of Yemen by collecting up data from four sources: two were histopathology centers (national center for public health laboratory-Hadramout sub-office, and medical Andalos laboratory center - private), the other two sources were not histopathology centers (Register of treatment abroad of the ministry of public health, Hadramout branch, and department of drug supply, health office, Hadhramout).

The study included all malignant cases diagnosed from January to December, 2006. The patient's name, sex, age, diagnosis, site of tumour, governorate, and source of data were fed into computerized data sheet (Excel), and a numerical code was given for each source.

Efforts were made to avoid case duplication. If the repetition was found between histopathology and non-histopathology sources, the histopathology source was fixed and the other was removed. If the repetition was found in non-histopathology sources, the more complete data was fixed and the other was removed. Out of the total collected cases (423), 89 cases were deleted and the final number of cases included was 334.

The neoplasms had been coded and classified according to the international classification of diseases for oncology (ICD-O, 3rd edition). The patients were divided into seven age groups, according to their ages (with class interval = 15 years). Paediatric malignancies were separated (< 15 years), according to site of cancer.

The neoplasms were arranged at first according to the main topographic classification of tumours and then re-arranged by using sub-classification to specify the most affected site in both males and females. The data were analyzed to find percentage, means, and standard deviations. The results of our study were compared with other local, regional and international studies.

Results

In the one year study period (2006), a total of 334 malignant tumours were analyzed. The total number of cases histopathologically diagnosed was 277 (83%) There were

Table-1: Topographic distribution of malignancies by age; Hadhramout; 2006.

No.	Code	Topographic site of tumor	No of cases	%	Age in years (mean SD[1])
1	C15-C26	Digestive organs.	68	20.35	51.64 ±16.75
2	C50	Breast	48	14.37	45.94 ±12.21
3	C42	Haematopoietic and reticuloendothelial systems	40	11.98	28.53 ±22.55
4	C51-C58	Female genital organs	31	9.28	54.58 ±13.24
5	C77	Lymph node	24	7.19	36.63 ±20.50
6	C44	skin	21	6.29	55.5 ±16.8
7	C69-C72	Eyes ,Brain and other parts of CNS2	20	5.98	33.85 ±19.72
8	C64-C68	Urinary tract	18	5.39	53.39 ±27.34
9	C73-C75	Thyroid and other endocrine glands	18	5.39	41.11 ±15.03
10	C30-C39	Respiratory system and intrathorcic organs	15	4.49	49 .89 ±16.21
11	C00-C14	Lip, oral cavity and pharynx.	12	3.59	50.33 ±17.52
12	C40-C41	Bones , joints and articular cartilages	5	1.5	23.60 ±14.38
13	C48	Retroperitoneum and peritoneum	3	0.9	17.33 ±13.01
14	C49	Connective tissues , subcutaneous and other soft tissues	3	0.9	20.33 ±16.07
15	C47	Peripheral nerves and ANS3	1	0.3	4
16	C60-C63	Male genital organs	1	0.3	65
17	C80	Unknown primary site	6	1.8	36.33 ±22.29
Total			334	100	44.73 ±20.24

1) SD: Standard Deviation. 2) CNS: Central Nervous System. 3) ANS: Autonomic Nervous System.

Table-2: Distribution of ten commonest malignant tumours by specific sites and sex, Hadhramout; 2006.

No.	Male		Female	
	Site	No. of cases (%)	Site	No. of cases (%)
1	Leukaemia	25 (16.66)	Breast	48 (26.09)
2	Colorectal	15 (10.00)	Colorectal	15 (8.15)
3	Lymph node	14 (9.33)	Cervix uteri	13 (7.07)
4	Urinary bladder	10 (6.67)	Skin	12 (6.52)
5	Skin	9 (6.00)	Leukemia	12 (6.52)
6	Stomach	8 (5.33)	Thyroid gland	11 (5.97)
7	Liver	7 (4.67)	Lymph node	10 (5.43)
8	Brain	7(4.67)	Uterus	9 (4.90)
9	Bronchus and lung	7 (4.67)	Stomach	8 (4.35)
10	Pharynx	7 (4.67)	Ovary	8 (4.35)
11	All others	41 (27.33)	All others	38 (20.65)
Total		150 (100)	Total	184 (100)

150 males (45%) and 184 females (55 %). The mean age of male patients was 43.85 ± 23 and that of the female patients was 45.60 ± 18 years. Age distribution shows that the peak incidence of cancer was between (46 - 60 years) age group, which included about 27 % of the total tumours.

The most common affected sites were digestive organs (20.35%), breast (14.37%), haematopoietic and reticulo-endothelial systems (11.98%), female genital organs (9.28%), and lymph nodes (7.19%).The highest mean age was found among patients with male genital system, skin, female genital organs, urinary tract, digestive organs and lips, oral cavity, and pharynx malignancies. Whereas the lowest mean ages were found among patients with peripheral nerves , retroperitonium , connective tissues and other soft tissues , bones , joints and articular cartilages and haematopoietic and reticulo-endothelial systems (Table-1).

Regarding topographic distribution by sex, the five major cancers in males were digestive organs (26%), haematopoietic and reticulo-endothelial system (18%), lymph node (9.34%), respiratory system and intrathoracic organs (8%), lip, oral cavity and pharynx (7.33). While in females, the most common cancers were breast (26.09%), female genital organs (16.86%), digestive organs (15.76%), haematopoietic and reticulo-endothelial system (7.07%) and thyroid and other endocrine glands (7.07%).

The most common malignancies in children under 15 years of age were haematopoietic and reticulo-endothelial system malignancies(48.68%), followed by eyes and brain (10.81%), lymph node (10.81%), and skin tumours (8.12%).

Regarding the frequent cancer by system involved: Colonrectum (C18, C19, and C20) was the most affected organ in digestive system (44.12%). Leukaemia was the most morphologic type of haematopoietic and reticulo-endothelial system malignancies (92.5%).Uterine cervix was the most affected organ in female genital system (41.94%). Brain tumours were the most common central nervous system malignancies (65%).Urinary bladder was the highest affected organ in the urinary tract (66.67%). Thyroid gland malignancies were the most common type of endocrine glands tumours (72.20%).

About (86.52 %) of the patients were from Hadramout governorate followed by patients from Shabwa governorate (9.58%) and Al-mahrah governorate (2.10%).

Finally we prioritize the most frequent cancers by specific sites affected, the leukaemia, colorectum, lymph node, urinary bladder, and skin malignancies were the most common cancers in males. In females, the first five common malignancies were breast, colorectum, cervix uteri, skin, and leukaemia (Table-2).

Discussion

This study was performed to give a base line description of pattern of the malignancies recorded in Hadramout through information registered in institution/pathology-based registries. These registries are not population-based cancer registries, but are the only sources of information available to give us a basic idea about the picture of cancer distribution. Many difficulties were faced in the interpretation of the results due to undetailed history and histopathological diagnosis which limit the study.

The results of our study showed that the malignancies were more frequent in females (55%) than in males (45%), and this is similar to a study carried out in south-eastern governorates of Yemen.

The first five organs in our study were digestive organs, breast, haematopoietic and reticulo-endothelial system, female genital system and lymph node malignancies and this is a similar pattern to what was quoted by other studies.[6,7,10,11] In another study performed in Sana,a (capital of Yemen) revealed that the breast and female genital system malignancies ranked the seventh and eight respectively, and this difference may be due the fact that reported cases from

referral hospitals in Sana'a were not representative to all cancer cases in Yemen (Table-3). Skin cancer ranked sixth in this study comparable with other studies.[6,9]

Table-3: Comparison of our study with previous studies.

No.	Present study, 2006	SEGY[1], 1998	Sana'a[2]. 2001
1	Digestive organs.	Gastrointestinal	Gastrointestinal tract
2	Breast	Breast	Lymph nodes
3	Haematopoietic and reticuloendothelial	Lymphoma	Head and neck
4	Female genital organs	Female genital system	Skin
5	Lymph node	Head & neck	Urinary tract
6	skin	Bone & soft tissue	Bone and soft tissue
7	Eyes ,Brain and other parts of CNS[2]	Thyroid	Breast
8	Urinary tract	Leukemia	Female genital system
9	Thyroid and other endocrine glands	CNS	Thyroid gland
10	Respiratory system and intrathorcic organs	Eye	Male genital system

1) South-eastern governorates of Yemen, by Bawazir. 2) By Abdulla K. Al-Thobhani.

Unlike our study, other studies revealed low incidence of central nervous system malignancies.[7,9] This difference can be accounted by undetailed histopathological diagnosis of brain tumours and other parts of the central nervous system, which cannot differentiate between benign and malignant tumors.

Urinary tract malignancies constituted the 8th common cancer in the current series, which is comparable with that found in South-Eastern governorates of Yemen.[7]

Thyroid gland cancers constituted the 9th common cancer which is comparable to other studies.[7,9] Like other studies, our study revealed that the thyroid cancer was more frequent in females than males.[12,13]

Incidence of respiratory system and intra-thoracic malignancies is low in comparison to other studies which showed high incidence of these malignancies.[11]

Regarding old age, male genital system, skin, and digestive organs malignancies were seen in an older age; a comparable finding with other studies.[6,7,9]

In males, the incidence of male genital system malignancies (including prostate cancers), like other Arabian Gulf and Asian countries, is very low compared to Western countries despite the high intake of calories and high consumption of animal fat.[7,10,14]

Among females, the malignant tumours of the breast were the most frequent as reported almost in all studies carried out in Yemen.[7,9,15] Internationally, also, the most common malignancies in females are of breast, in both developed and less developed regions, while in South central Asian countries, cervical (uterine) tumours are reported to be most frequent followed by breast tumours.[10]

Colorectal carcinomas were the most common malignancies of digestive system followed by stomach and esophagus cancers. Comparable findings were found in several studies in Yemen, Saudi Arabia, and Pakistan.[8,16-19]

In children under 15 years of age, the haematopoietic and reticulo-endothelial systems malignancies (leukaemia) were the commonest type of tumour, and this in accordance with that found in Pakistan.[10]

The age group between (46-60) years is the most affected age group, which is similar to other studies.[7]

The five most common cancers in males (by specific site) were leukaemia, colorectum, lymph node, urinary bladder, and skin cancers. A comparable distribution as found in Pakistan.[10] In females, the five most common cancers were breast, colorectum, cervix uteri, skin, and leukaemia, and this distribution is also comparable to a Pakistan study.[10]

About (86.52%) of patients were from Hadramout followed by patients from Shabwa and Al-Mahrah. This does not indicate that the incidence of cancer is lower in those governorates. It can be attributed to in-accessibilities to health care facilities and cancer registry.

Conclusions

The most common type of cancers found in our study was in general cancer of digestive system and in females was breast cancer while in children under 15 years of age was cancer of haemtopoietic system (leukaemia). Cancers were reported frequently in the age group of 45-60 years with high frequency in females than males.

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physical and mental development.[3]

Children are engaged in work that is harmful, dangerous and/or exploitative such as slavery, trafficking, debt bondage, prostitution, pornography and other illicit activities.[4]

It is also important to realize that child labour is not confined to Pakistan; rather, it is a global issue. According to an ILO (2004a) report, more than 2 million children are found engaged in domestic labour in South Africa, 559,000 in Brazil, 250,000 in Haiti, 200,000 in Kenya, 100,000 in Sri Lanka, 300,000 in Bangladesh and 264,00 in Pakistan.[4] However, the Human Rights Commission of Pakistan estimated the number of Pakistani working children to be around 11-12 million out of which at least half the children are under the age of ten.[5]

Similarly, it is believed that child labour does not prevail in developed countries or is relatively less severe, but the fact is that it prevails equally in privileged countries as well. Countries like the United States had also declared a child protection emergency in 1993.[6]

Despite recent series of laws prohibiting child labour children make up a quarter of the unskilled work force and can virtually be found in every industry, workshop and on the streets.[7]

Globally, we have not yet created a conducive nurturing environment for children to enjoy the best years of their childhood and groom as responsible leaders and citizens.[8]

This raises the question of quality and number of future leaders we are bringing up. Who would lead Pakistan in the 22nd century? In the light of the current situation it seems important to examine the issues with reference to possible and doable solutions in order to address the issue of child labour and ensure a healthy nation.

Introduction to Framework

Before analyzing the determinants, it is important to have the brief over view of the model that is used as framework for in-depth analysis of the issue. The model was introduced by Clemen-stone, McGuire in 1991.[9] It summarizes the various parameters the health care providers could examine while analyzing the health status of any community. It comprises of physical, social and moral aspects of wellness which are interconnected with health care delivery system, people and environment resource characteristics that make an impact on a community's state of well being. If there are changes in any one component, the balance of health is altered in the community setting. This framework enables health care providers to assess a particular community and then implement accordingly to achieve the desirable outcome. Moreover, it would be a stepping stone to sensitize stakeholders towards this most ignored issue.

Determinants of Child Labour

Psycho-socio-cultural:

Keeping in mind that South East Asia is amongst the fastest growing economies in the region, it has a high poverty level. It is also debated that poverty is not the only cause of child labour, but discrimination on the basis of caste, gender, tribal, religious reasons or school system are also contributing factors.[10] The issue gets more severe in the absence of an effective social security system, and consequently, forms the basis of an even harsher type of child labour, the so called bonded labour. In the case of bonded labour the child is released only when the guardian pays off the debt or makes a lump sum payment to the employer as the parents or the family of the child have meager borrowing sources in the form of governmental loans or micro financing facilities to resolve such cases. In addition to this, the deficient economic framework of the country for the less privileged class lays the grounds for child labour; hence, inhibiting children from attending schools, and growing into illiterate adults working on meagerly paid jobs.

The inadequate schooling system also adds fuel to the fire, as parents feel that it is better to make their children work and learn home based skills than to send them to schools which are overcrowded, poor in sanitation and have dismal teaching. This lack of effective education system and availability of functional schools are both causes and consequences of child labour. Due to illiteracy, working conditions for these children gets worse as they are not even aware of the occupational benefits. It is necessary to work at all levels — organizational, governmental, as well as individual — to help such children get out of this vicious cycle of labour and poverty.[11]

Organizational:

There exist laws formulated by the Government of Pakistan, both as part of its constitution and at other organizational levels, clearly mentioning, that forced labour resulting in disability or kidnapping, sexual abuse, and torture is severely punishable with maximum penalty up to life imprisonment. Apart from the constitution, such laws are also a part of other organizational laws, such as Factories Act, 1934; West Pakistan Shops and Establishment Ordinance; The Employee Children Act, 1991; The Bonded Labour System Abolition Act, 1992; and the Punjab Compulsory Education Act 1994,[12] but the most crucial problem is the implementation of these laws; and as ordinances. The so called enforcing agencies have failed to