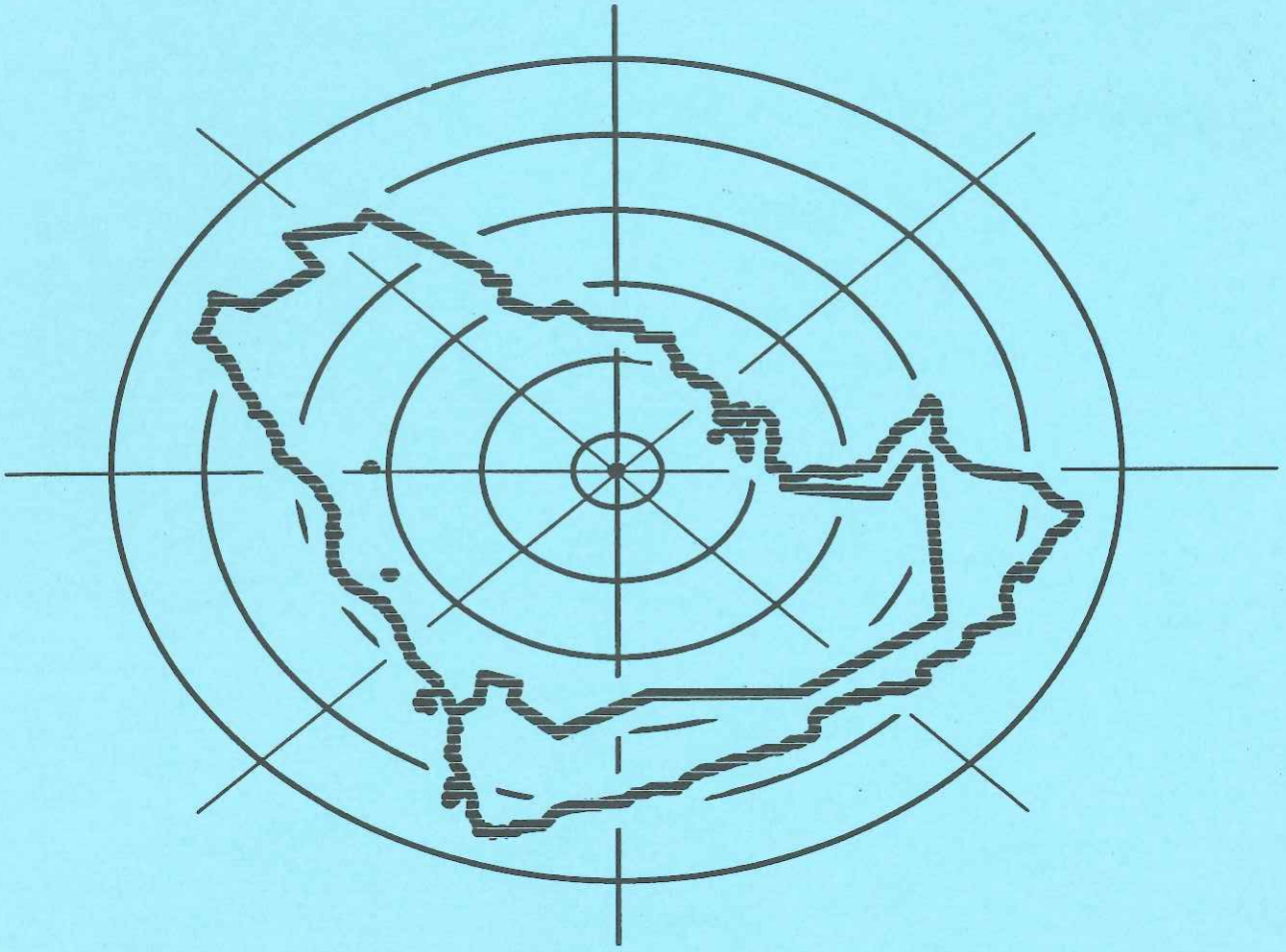
1989
ANNUAL REPORT OF THE TUMOR REGISTRY



KING FAISAL SPECIALIST HOSPITAL & RESEARCH CENTRE
RIYADH, KINGDOM OF SAUDI ARABIA

ACKNOWLEDGEMENTS:

The Cancer Program is a combined effort of many individuals. It is not possible to enumerate all the nurses, technicians, therapists, pharmacists, dentists, physicians and others whose work is primarily on behalf of the patient with cancer. In addition, nearly everyone associated with the hospital comes in contact with the cancer patient from time to time, frequently contributing significantly to their care. The Cancer Program recognizes this hospital-wide involvement in the care of cancer patients. The information in this report is provided to assist all health care professionals to better understand the problems faced in treating patients with cancer.

The following Departments have assisted throughout the year and without their invaluable support this report would not be possible. The Tumor Registry staff acknowledges these Departments:

Biomedical Statistics and Scientific Computing
Computer and Hospital Information Centre
Medical Records Department

SPECIAL THANKS TO:

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Peter Ernst, M.D., Chairman, Tumor Committee (Oct. 1989)
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October 1990

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I. KING FAISAL SPECIALIST HOSPITAL & RESEARCH CENTRE CANCER PROGRAM ACTIVITIES

Tumor Registry

The KFSH&RC Tumor Registry is a data system designed for the collection, management, and analysis of data on patients with the diagnosis of a malignant disease (cancer). The basic source document is the patient's medical record from which pertinent information is abstracted for use in the Registry.

The primary responsibility of the Registrar is to assure that complete and accurate data are collected and maintained on all cancer patients diagnosed and/or treated within this institution. Records are reviewed for both inpatients (patients admitted to the Hospital) and outpatients (patients seen in a clinic, emergency room, Polyclinic, Family Health, or other hospital facility). The Cancer Registry Abstract is the primary document on which the details of each diagnosed cancer patient are recorded. Included are pertinent facts such as demographic information, medical history, diagnostic findings, stage of disease, cancer therapy, and follow-up data. Please refer to Figure 1 for a sample worksheet.

Once the data are collected, the ability and need to utilize them is paramount. One of the major functions of the Tumor Registry is to prepare annual reports which summarize the Registry's cancer experience. In addition, the Registry provides a wide variety of reports at the request of physicians and researchers. The goal of the Tumor Registry of KFSH&RC is to provide the medical staff with data that will enable them to see the results of their diagnostic and therapeutic efforts, and to provide them with information with which to improve the care of the patient with cancer.

Additionally the Registry serves as a resource for continuing education of physicians and paramedical personnel at clinical conferences, medical society meetings, seminars, and discussion groups. The Tumor Registry can serve as the focus for the interdisciplinary approach to cancer management, including surgery, radiotherapy, chemotherapy, immunotherapy, and hormone therapy. The Registry can provide the hospital staff, both medical and administrative, with statistical and analytic summary reports evaluating the cancer problem in the institution. These reports assist administrators with solving their operational problems and assist physicians with the development of comprehensive cancer care.

The registry, under the medical supervision of the Tumor Committee maintains a complete data base of all cancer cases diagnosed and/or treated at KFSH & RC. This database now includes more than 19,000 cases diagnosed from June 1975 through December 31, 1989. Approximately 2,000 new cases are being added annually.

The data maintained by the registry are available for use by the medical staff for special studies, audits, and research. During 1989, the Registry participated in 46 special studies utilizing data from the computerized file. The use of registry data has steadily increased during the past year and its continued use is encouraged. Please refer to Appendix A for a listing of Special Studies requested in 1989.

FIGURE 1

PATIENT NAMEPLATE

KING FAISAL SPECIALIST HOSPITAL AND RESEARCH CENTRE

CANCER REGISTRY WORKSHEET (CanSur 3.0)

PF 10 TACS - ACCESSION FILE MAINTENANCE

ACCESSION NUMBER (ACSN): 8 7 0 1 2 3

TUMOR SEQUENCE (SEQ): 0 0

Malignant/In situ tumors: 00 - One primary only; 01 - First of two or more; ...; 99 - 99th or later primary; 99 - Unspecified sequence

Benign tumors: XX - One primary only; AA - First of two or more; ...; HH - 8th or later primary; II - Unspecified sequence

THIS CANCER ACCESSION YEAR: 8 7

MEDICAL RECORD NO.: 2 1 4 6 5 7

CASE STATUS: 3
0 - Suspense; 1 - Incomplete; 3 - Completed per Release 3

PATIENT NAME
Last:
First:
Second:
Third:

ADDRESS AT DIAGNOSIS
P.O. Box
Riyadh
City
Prov: R IY ZIP Code:

PF 11 TPAT - PATIENT IDENTIFICATION

SAUDI ID: 0 0 0 0 1 4 2 3 4

BIRTH DATE: 0 1 / 0 1 / 1 9 4 6

AGE AT DX: 0 4 1

SEX: 2
1 - Male; (2) Female; 9 - Unknown

NATIONALITY: 0 0
(00) Saudi; 01 - Amer. Can, Brit; 02 - Egyptian; 03 - Leb, Syr, Pal; 04 - Yemeni; 05 - Other Arab; 06 - Ind, Pak; 07 - African; 09 - Other

MARITAL STATUS AT DX: 2
1 - Single; (2) Married; 3 - Separated; 4 - Divorced; 5 - Widowed; 9 - Unknown

RELIGION: 0 1
(01) Muslim; 02 - Christian; 03 - Hindu; 04 - Buddhist; 05 - Other; 99 - Unknown

ALCOHOL USAGE: 3
1 - Current alcohol usage; 2 - Past history of alcohol usage; (3) Never used alcohol; 9 - Unknown

FAMILY HISTORY OF CANCER: 1
(1) Family history of cancer; 2 - No family history of cancer; 9 - Unknown

SMOKING/CHEWING HISTORY: 3
1 - Current smoker cig; 2 - Past smoker; (3) Patient never smoked; 4 - Other; 5 - Shamma; 6 - Sheha; 7 - Combo; 8 - Other; 9 - Unknown

TOTAL PACK YEARS:

INDUSTRY:

OCCUPATION: Housewife

DATE ADMITTED (mm/dd/yyyy): 0 1 / 2 0 / 1 9 8 7

DATE DISCHARGED (mm/dd/yyyy): 0 2 / 1 5 / 1 9 8 7

REPORTING SOURCE: 1
(1) Inpatient; 2 - Clinic/outpatient; 3 - Laboratory; 4 - Physician's office; 5 - Nursing home; 6 - Autopsy; 7 - Death Cert.; 9 - Unknown

HOSPITAL REFERRED FROM: 0 0 0 0 1 0 1
Riyadh Central Hospital

HOSPITAL REFERRED TO:

Form 980-1] (Rev. 9-10)

PF 12 TTXT - MISCELLANEOUS TEXT

PHYSICAL EXAM:

X-RAYS / SCANS:

SCOPES / LAB: ERA (+), PRA (+)

OPERATIVES FINDINGS: 2/14 regional lymph nodes (+)

PATHOLOGY / AUTOPSY: 871570

PF 13 TCAN - CANCER IDENTIFICATION

DATE OF INITIAL DIAGNOSIS (mm/dd/yyyy): 0 1 / 0 5 / 1 9 8 7

CLASS OF CASE: 2
0 - Dx here, rx elsewhere; 1 - Dx & rx here; (2) Rx here; 3 - Rx elsewhere; 4 - Rx here prior; 5 - Dx at autopsy; 9 - Unknown

PRIMARY SITE - TEXT: Breast, UOQ, right

CODE: 1 7 4 4

HISTOLOGY - TEXT: Infiltrating Ductal Carcinoma, Grade III

CODE: 8 5 0 0 / 3

TCAN - Cancer Identification (Continued)

GRADE: 3
1 - Well differentiated (I); 2 - Mod well differentiated (II); (3) Poorly differentiated (III); 4 - Undifferentiated (IV); 5 - T-cell; 6 - B-cell; 7 - Null cell; 8 - Not stated, unknown

LATERALITY: 1
0 - Not paired organ; (1) Right; 2 - Left; 3 - Rt or lt unspecified; 4 - Both, simultaneous; 9 - Unknown, laterality

DX CONFIRMATION: 1
(1) Positive histology; 2 - Cytology; 4 - Pos. micro. confirm., NOS; 5 - Laboratory test/marker; 6 - Direct visualization; 7 - Radiography; 8 - Clinical; 9 - Unknown

REGIONAL NODES EXAMINED: 1 4
00 - No nodes examined; 01 - One node examined; (14); 97 - 97 + nodes examined; 98 - Nodes examined, number unknown; 99 - Unknown if nodes examined

REGIONAL NODES POSITIVE: 0 2
00 - No nodes positive; 01 - One node positive; (02); 97 - Positive nodes, number unknown; 98 - No nodes examined; 99 - Unknown if any nodes +; 96 - 96 + nodes positive

TUMOR SIZE (cm): 0 3 5
eg., 000 - No mass; 002 - 0.2 cm; 050 - 5.5 cm; 999 - Unknown

RESIDUAL TUMOR: 9
0 - None; 1 - Microscopic; 2 - Macroscopic; (5) Unknown; 6 - No resection, NA

DISTANT METS.: 1
0 - Bone Mar.; 1 - Peritoneum; 2 - Lung; 3 - Pleura; 4 - Liver; 5 - Bone; 6 - CNS; 7 - Skin; 8 - Lymph node (distant); 9 - Unknown/other; 2; 3

GENERAL SUMMARY STAGE: 3
0 - In situ; 1 - Localized; 2 - Regional direct extension; (3) Regional nodes; 4 - Regional both 2 & 3; 5 - Regional NOS; 7 - Distant; 9 - Unknown/unstageable

AJCC STAGE:
CLINICAL T ... + N ... + M ... , STAGE GROUP ... **
PATHOLOGICAL T 2 A + N 1 A + M 0 , STAGE GROUP ... **
OTHER** T ... + N ... + M ... , STAGE GROUP ... **

*TNM Codes - use alpha codes as appropriate eg T2A-2A T2-2 N1B-1B, M0-0, IS-in situ, X-Unknown

**AJCC Stage Group - use alpha codes as appropriate eg 3A - Stage IIIA, 1 - Stage I
0 - In situ; 1 - Stage I; 2 - Stage II; 3 - Stage III; 4 - Stage IV; 9 - Unknown

***Other Basis: (S-Surgical, A-Autopsy, R-Retreatment

PF 11 TPAT - PATIENT IDENTIFICATION

SAUDI ID: 0 0 0 0 1 4 2 3 4

BIRTH DATE: 0 1 / 0 1 / 1 9 4 6

AGE AT DX: 0 4 1

SEX: 2
1 - Male; (2) Female; 9 - Unknown

NATIONALITY: 0 0
(00) Saudi; 01 - Amer. Can, Brit; 02 - Egyptian; 03 - Leb, Syr, Pal; 04 - Yemeni; 05 - Other Arab; 06 - Ind, Pak; 07 - African; 09 - Other

PF 14 TRX1 - 1ST COURSE TREATMENT (SURGERY, RADIATION)

SURGERY

REASON: 0
(0) Can-directed surg performed; 1 - Not recommended; 2 - Contraindicated other; 6 - Reason unknown, no surg; 7 - Patient/guardian refused; 8 - Recommended, unk if done; 9 - unknown

SUMMARY (Entire 1st course)*: 5 0

AT THIS HOSPITAL*: 5 0

* Refer to Appendix A in CanSur User Manual for site-specific codes

STARTED (mm/dd/yyyy): 0 1 / 2 1 / 1 9 8 7

TEXT: Rt. mod rad mastectomy

RADIATION

SUMMARY

AT THIS HOSPITAL: 1
0 - No Radiation therapy; (1) Beam radiation; 2 - Radioactive implants; 3 - Radioisotopes; 4 - Comb 1 + 2 or 3; 5 - Radiation therapy, NOS; 7 - Patient/guardian refused; 8 - Recommended, unk if done; 9 - Unknown

STARTED (mm/dd/yyyy): 0 2 / 1 6 / 1 9 8 7

TO BRAIN & CNS (Lung & leukemias cases only): 9
0 - None to CNS; 1 - Radiation therapy; 7 - Patient/guardian refused; 8 - Recommended, unk if done; 9 - Unknown/not applicable

RADIATION/SURGERY SEQ: 3
0 - Not applicable; (3) Radiation after surgery; 4 - Before & after surgery; 5 - Intraoperative radiation; 6 - Intraoperative plus 2, 3 or 4; 9 - Sequence unknown

TEXT: Chest wall and reg. lymph nodes
6000

PF 15 TRX3 - 1st COURSE TREATMENT (CHEMO, HORMONES, BRM, OTHER)

CHEMOTHERAPY

SUMMARY: 3

AT THIS HOSPITAL: 3
0 - No chemotherapy; 1 - Chemotherapy, NOS; 2 - Chemotherapy, single agent; (3) Chemotherapy, multi-agent combination; 7 - Patient/guardian refused; 8 - Recommended, unk if done; 9 - Unknown

STARTED (mm/dd/yyyy): 0 3 / 0 1 / 1 9 8 7

TEXT: Adria, Ctx, 5-FU

HORMONE/STEROIDS

SUMMARY: 1

AT THIS HOSPITAL: 1
(0) No hormonal therapy; 1 - Hormonal therapy; 2 - Endocrine surg/radiation; 3 - Hormones + endocr surg/rad; 7 - Patient/guardian refused; 8 - Recommended, unk if done; 9 - Unknown

STARTED (mm/dd/yyyy): 0 2 / 0 1 / 1 9 8 7

TEXT: Tamoxifen

BIO-RESPONSE MODIFIER (BRM)

SUMMARY: 0

AT THIS HOSPITAL: 0
(0) No BRM; 1 - BRM; 2 - Allo BMT; 3 - Auto BMT; 7 - Patient/guardian refused; 8 - Recommended, unk if done; 9 - Unknown

STARTED (mm/dd/yyyy): / /

TEXT:

OTHER Rx

SUMMARY: 0

AT THIS HOSPITAL: 0
(0) No other ca-directed rx; 1 - Other ca-directed rx; 2 - Experimental ca rx; 3 - Double-blind study; 6 - Unproven therapy; 7 - Patient/guardian refused; 8 - Recommended, unk if done; 9 - Unknown

STARTED (mm/dd/yyyy): / /

TEXT:

PF 16 TRX2 - SUB THERAPY

	Started mm/dd/yyyy	Course	Type	Code	Desc
1	/ /				
2	/ /				
3	/ /				

PF 17 TRUI - FOLLOW-UP INFORMATION

LAST CONTACT/DEATH (mm/dd/yyyy): 0 3 / 0 1 / 1 9 8 7

CAUSE OF DEATH-ICD CODE:

CURRENT VITAL STATUS: 1 (1) Alive; 2 - Dead

CURRENT CANCER STATUS: 1
1 - No evidence of cancer; (2) Evidence of cancer; 9 - Unknown

QUALITY OF SURVIVAL: 9
0 - Normal; 1 - Bym & emb; 2 - Amb > 50%; 3 - Amb < 50%; 4 - Bedridden; (5) Unknown; 8 - NA, dead

LETTER FLAGS -
PATIENT: (letter or asterisk, eg., *, A, B, 1)
CONTACT: eg. 0 - first contact, 3 - third contact)

CURRENTLY FOREIGN RESIDENT:
Y - Yes, foreign resident, leave blank for all others

CONTACT FREQUENCY: months
(eg., 01 - One month, 03 - 3 months, 12 - Annual follow-up)

UNUSUAL CONDITIONS:

PLACE OF DEATH: (State of country - Geocode)

RECURRENCE INFORMATION

DATE (mm/dd/yyyy): / /

TYPE: 3
0 - No recurrence; 1 - Local recurrence; 2 - Regional recurrence; (3) Distant recurrence; 4 - Never free; 9 - Unknown

DISTANT METS. 1: 4; 2: 5; 3: 8
0 - BM; 1 - Peritoneum; 2 - Lung; 3 - Pleura; 4 - Liver; 5 - Bone; 6 - CNS; 7 - Skin; 8 - Lymph node (distant); 9 - Unknown /Other

	FU LETTER FLAGS	CODE	PHYSICIAN NAME
1. ATTENDING PHYSICIAN:		0 1 2 3 4 5	Oncologist
2. OTHER PHYSICIAN:		6 7 8 9 1 2	Rad Oncologist
3. OTHER PHYSICIAN:		3 4 5 6 7 8	Surgeon
4. OTHER PHYSICIAN:			
5. OTHER PHYSICIAN:			
6. OTHER PHYSICIAN:			

LAST SOURCE FU HOSP:

NEXT HOSP FOR FU:

DEATH CERTIFICATE FILE NO:

PF 20 TREM - REMARKS/SPECIAL DATA ITEMS

FREE FORMAT AREA:

REMARKS: Mother had breast cancer

OVERRIDE FIELDS (Y - Bypass edit, leave blank if edit not bypassed)

SITE/HIST:
AGE /SITE/HIST:
BEHAV/SITE/HIST:

SPECIAL FIELDS
1: Hepatitis
2: Bilharzia
3: Burn Scar
4: Consanguinity
5: Predisposing Factors
6: Pregnancy during dx/tx
7: Renal Transplant
8: Immunodeficiency Disorder
9:
10:

PF - 21 TADR - PATIENT NAME ADDRESS FILE

MAILING NAME: SAP
SALUTATION:
ADDRESS 1: Riyadh
ADDRESS 2:
CITY: Riyadh
PROV: RY ZIP CODE:
TELEPHONE: (001) 466-1234 EXT:
COMMENT:
PATIENT/GUARDIAN CODE: P - Patient; G - Guardian

PF - 22 TCON - CONTACT NAME/ADDRESS FILE MAINTENANCE

CONTACT NUMBER: (0 - First contact, 1 - Second, ... 9 - Tenth)
MAILING NAME: Riyadh Central Hospital
SALUTATION:
ADDRESS 1: Riyadh
ADDRESS 2:
CITY: Riyadh
PROV: RY ZIP CODE:
TELEPHONE: ( ) - EXT:
COMMENT:
REFER HOSP MRN: 81548

Tumor Committee

The multidisciplinary Tumor Committee, which meets monthly, is the policy-making body of the Cancer Program at KFSH&RC (see Appendix B for membership listing). During 1989, the Committee provided professional guidance to the Tumor Registry, selected replacement of computer system, promoted awareness in cost-effectiveness of cancer treatment, reviewed and updated the Tumor Registry Reportable List and provided follow-up on patient education activities.

A. Selection of Replacement Computer System

In April 1989, Administration approved the transfer of the Tumor Registry database to the IBM mainframe computer and approved the use of the American College of Surgeons (ACoS) software, CANSUR 3.0. Conversion of the codes to conform with ACoS coding format was accomplished, the software installed, and a pilot dataset was transferred.

B. Cost-Effectiveness of Cancer Treatment

During the past five years, several investigative modalities of cancer treatment became accepted as standard therapies. These modalities utilized very expensive anti-cancer drugs or complex chemotherapy regimens requiring advanced expensive supportive technologies.

With the costs of treatment of cancer patients skyrocketing, questions arise concerning limited funds available for cancer treatment and type of patients best best candidate to benefit from such therapies. Issues related to cost effectiveness of treatment of cancer patients were the subject of several publications during the past few years.

C. Review and Update of Tumor Registry Reportable List

New revisions in the ICD-O coding book resulted in additions and changes to the Reportable List of the Tumor Registry. Myxoma was added; plasmacytoma was removed from the indeterminate tumor list because of the new assignment to malignant behavior. Dermatofibroma protuberans was deleted because the tumors are now classified as either malignant (dermatofibrosarcoma protuberans) or benign (dermatofibroma).

D. Follow-Up on Patient Education Activities

Mr. Bleihid Al Bleihid was invited to present an update on the KFSH&RC Patient Education Committee (PEC) activities. He reviewed the duties of this committee: assess the needs of the departments, coordinate the activities, prepare, update, and distribute patient education materials in the form of pamphlets and video tapes. Mr. Al Bleihid commented that 114 subjects have been reviewed for educational materials and several videos have been completed. The process of preparing educational materials - materials obtained and translated, edited, and screened to insure they are understood by Saudi patients, reviewed by Medical Affairs, and submitted for artwork and printing was described.

Tumor Board

This educational conference is held once weekly for the benefit of the attending staff, house staff, allied health professionals and visiting attending staff from other hospitals. Cases of various types of malignant disease are selected for presentation on the basis of complexity, unusual manifestations of the disease, or interest. A total of 97 cases were presented in 1989. Each presentation includes an outline of the medical history, physical findings, clinical course, radiographic studies, and pathological interpretations. Following each presentation, there is an informal discussion of the case and a review of pertinent medical literature. Those attending are encouraged to share personal experience in the management of similar cases. Please refer to Appendix C for a summary of cases presented.

Tumor Conference

This didactic conference is held weekly and is attended by the Medical staff and allied health professionals. Speakers are drawn from the KFSH&RC Medical and Research staff as well as from visiting guests. Please refer to Appendix D for listing of the topics presented at Tumor Conference in 1989.

II. THE KFSH&RC TUMOR REGISTRY DATABASE 1975 - 1989: 19,000+ CASES

The KFSH&RC opened in 1975 to provide specialized medical treatment to the people of Saudi Arabia and to promote the prevention of disease through research and education. It is a national referral hospital and the principal center for cancer therapy in Saudi Arabia. There are over 500 inpatient beds and 3,000 employees. The Tumor Registry is under the administrative direction of the Chairman of the Department of Oncology and under the supervision of the Tumor Committee. The Registry was designed to meet the guidelines for an approved American College of Surgeons (ACoS) Cancer Program and the data set contains all ACoS required data items.

The Registry is large (accessioning over 2,000 cases per year) with 19,885 cases on file to date. The database is computerized using an IBM 3090 Main Frame Computer. Although the Tumor Registry is not population based, KFSH&RC is the primary referral institution for the Kingdom and therefore represents the majority of oncology patients. Until mid-1981, it was the only facility within the Kingdom able to provide radiation therapy.

A total of 19,885 cases (19,684 patients)* were registered during the period between 1975 and 1989 (11,111 males and 8,774 females). Overall male to female ratio was 1.3.

The largest male:female ratios in non-sex organs were found in cancer of the larynx (6.4), liver (4.2), bladder (4.1), lung (3.8), nasopharynx (2.7), pancreas (2.7), Hodgkin's Disease (2.5), stomach (2.4) and non-Hodgkin's lymphoma (2.2). Only thyroid disease exhibited a markedly low male:female ratio of 0.4.

Figure 2 illustrates the sex distribution, Figure 3 the nationality, and Figure 4 the geographic referral pattern of all cases.

The largest number of cancers was seen in the 5th and 6th decades in males and in the 4th and 5th in females. Please refer to Figure 5. The mean age for all patients is 44.4, the median is 48.2, and the mode is 62.0.

Staging of diseases at diagnosis has improved over the years. There were 2,243 cases (69.6% of all cases) which were unstaged in 1975-1979, 4,911 cases (70.5%) in 1980-1984, and 1,353 cases (14.0%) in 1985-1989.

A summary of trends of relative frequency of cancer types follows on page 9. The crude relative frequency is the proportion of a given cancer in relation to all cases in a clinical or pathological series. Although such frequencies are subject to many biases, historically many elevated frequencies have been confirmed when complete cancer registration was introduced.

Biases that may have an affect on the relative frequency of different neoplasms include:

- possible nonusage of medical services by some of the population so that the hospital population may not reflect the disease state of the community
- resistance to examination by part of the female population
- absence of postmortem examinations/death certificates
- selective referral of certain malignancies because of a speciality service provided
- age distribution of the population

* Please note distinction between the terms "patient" and "case" in this report. A patient with more than one neoplasm is reported as multiple cases.

FIGURE 2
DISTRIBUTION OF 19,885 CASES BY SEX
1975 - 1989

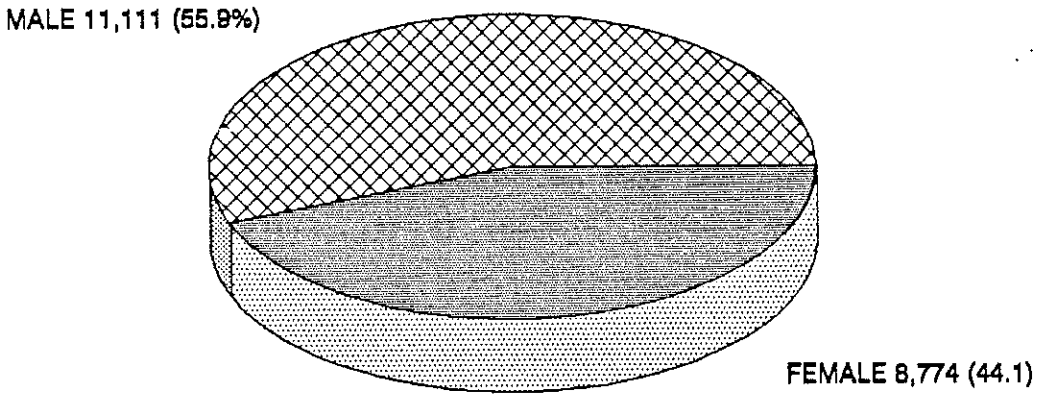


FIGURE 3
DISTRIBUTION OF 19,885 CASES BY NATIONALITY
1975 - 1989

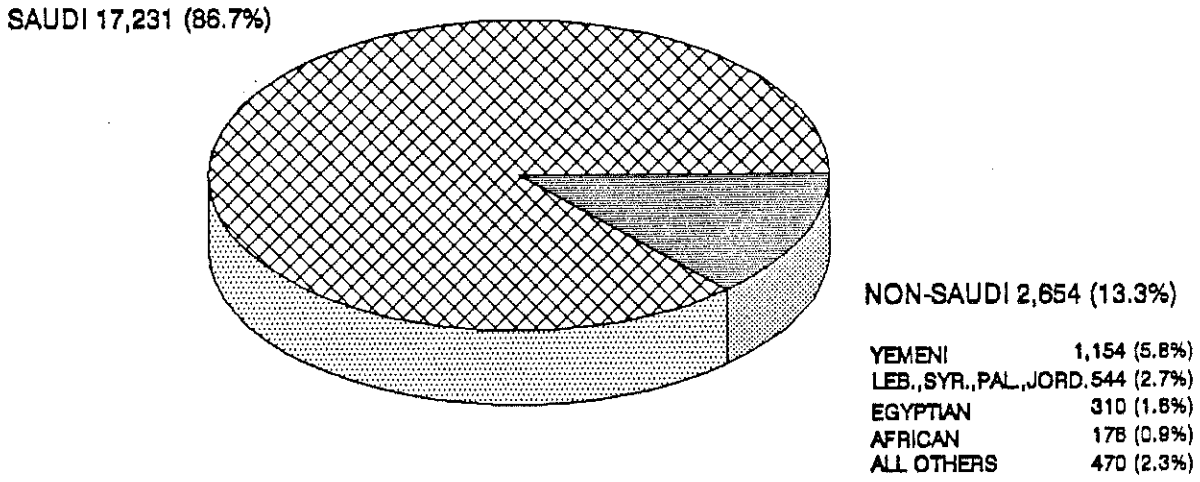
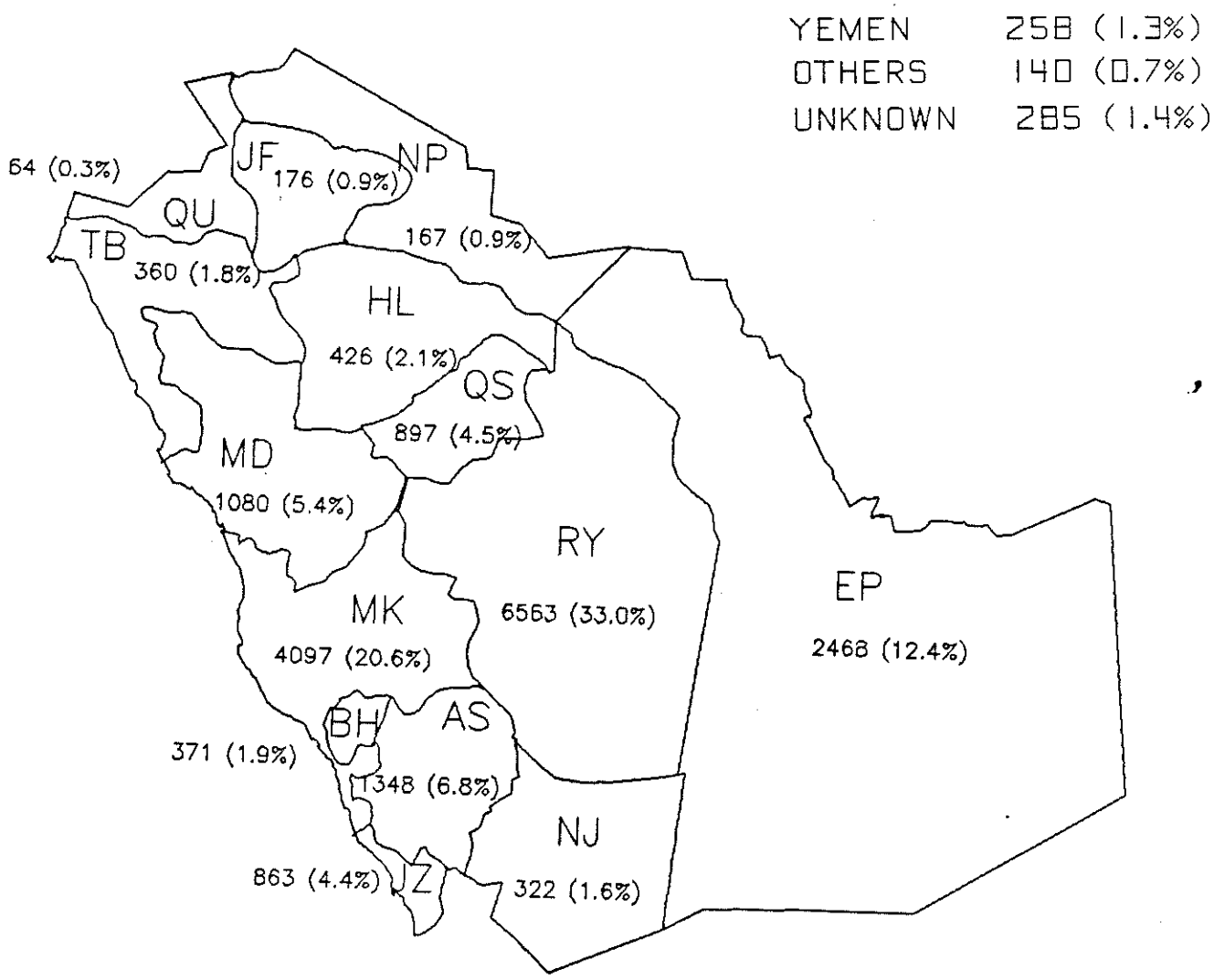


FIGURE 4

DISTRIBUTION OF 19,885 CASES BY GEOGRAPHIC REGION

Based on Given Address at the Time of Diagnosis

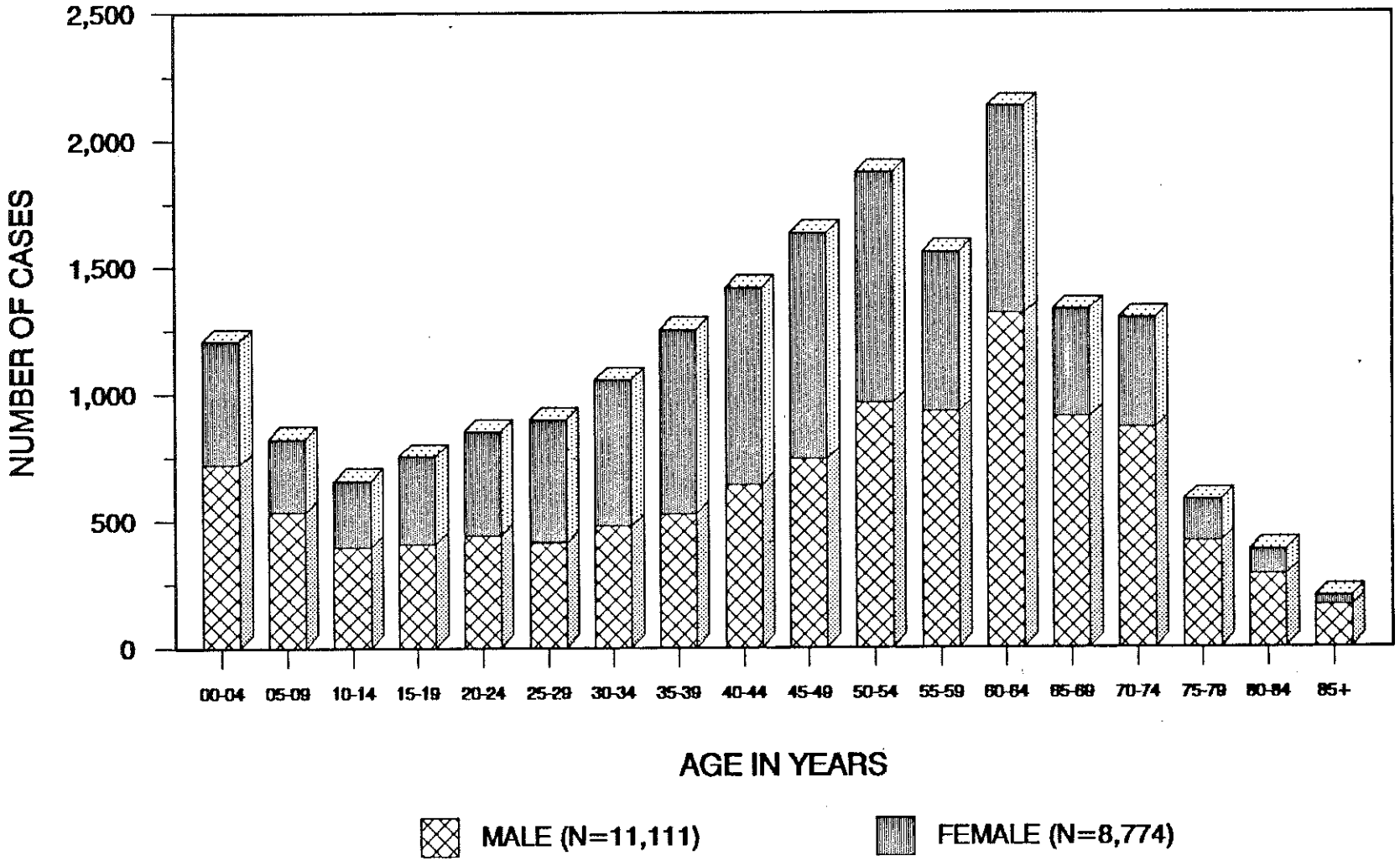
1975 - 1989



AS	-	ASIR	MK	-	MAKKAH
BH	-	AL BAHA	NJ	-	NAJRAN
EP	-	EASTERN PROVINCE	NP	-	NORTHERN PROVINCE
HL	-	HAIL	QS	-	AL QASIM
JF	-	AL JAWF	QU	-	AL QURAYYAT
JZ	-	JIZAN	RY	-	RIYADH
MD	-	AL MADINAH	TB	-	TABUK

FIGURE 5

DISTRIBUTION OF 19,885 CASES BY AGE
1975 - 1989



TRENDS IN RELATIVE FREQUENCY OF CANCER IN KFSH&RC TUMOR REGISTRY DATABASE

The relative frequencies of primary cancers seen at KFSH&RC are very different than the Western world. Common tumors of the West (lung, colon, and prostate) are much less frequent in Saudi Arabia, although breast cancer in Saudi women is the most common malignancy as it is in the Western countries. See Figures 6, 7, and 8 for the distribution of the most common malignancies for the period 1975-1989.

Lymphomas - Overall, 1,678 cases were diagnosed with NHL (nodal and extra-nodal), accounting for approximately 8.4% of all neoplasms. The most striking feature is the unusually high crude relative frequency of non-Hodgkin's lymphoma (NHL) which is the most common type of malignancy seen in males and sixth most common in females. Male:female ratio is 2.2. NHL is the second most common malignancy in children under the age of 15 years. In the USA, NHL accounts for only about 3% of all cancer.

Leukemias - All leukemias constitute 7.8% of all neoplasms referred to KFSH&RC (compared to about 3% of all neoplasms diagnosed in the U.S.A.). The leukemias make up the most common malignancy in children under the age of 15 years.

The male:female ratio is 2.1 for lymphoid leukemia and 1.4 for myeloid.

Breast - In the female, breast cancer is by far the commonest tumor (16.4% of all female malignancies). The mean age at diagnosis is a decade younger than seen in the Western world (average age of a Saudi female with breast cancer is 45 years).

Oral Cavity - High crude relative frequency rates were also found for cancer of the oral cavity. In Western countries, oral cancer accounts for no more than 3% of all cancers, whereas at KFSH&RC it represents 5.8% of the cases. The male:female ratio is 1.3.

Thyroid - 4.7% of all male malignancies in the KFSH&RC Registry are thyroid tumors. However, they represent 7.5% of female neoplasms, second only to breast cancer in Saudi women. The male:female ratio is 0.4.

Lung - Frequency of lung cancer is much lower than in Western countries, most likely reflecting the much lower levels of smoking and industrial pollution. In U.S.A. primary lung cancer represents about 15% of all cancer cases (20% in males, and 11% in females).

At KFSH&RC, 4.5% of the diagnoses are lung cancer, although in males it is the third most common tumor (constituting 6.3% of male malignancies). The male:female ratio is 3.8.

Esophagus - The occurence of esophageal carcinoma is markedly more frequent in Saudi Arabia than in Western countries. In the U.S.A. it constitutes 1% of all cancers, compared to 4.4% at KFSH&RC. The male:feamle ratio is 1.6.

Nasopharynx - The most dramatic crude relative frequency ratios are seen in nasopharyngeal carcinoma when international data are compared. Cancer of the nasopharynx constitutes less than 1% of the pathologically diagnosed cancers in most centers in Europe and America, but is 3.4% of the cases at KFSH&RC. The male:female ratio is 2.7.

Colo-Rectal - Markedly less common than in the West, for which dietary factors (particularly lower animal fat intake) may play a role, this disease represents only 3.2% of all tumors. In America it constitutes 15% of newly diagnosed cancer cases. The male:female ratio at KFSH&RC is 1.6.

Prostate - The observed rate of prostatic cancer in men is much lower than in the West, where it is one of the most common male cancers (constituting 20% of the malignancies). This is in contrast to the KFSH&RC experience, where prostatic cancer makes up only 1.1% of the male cancer. This is probably due to the population age difference. Prostate cancer is a disease chiefly of old men and the population of Saudi Arabia is in general very young.

Tables 1 to 7 show the number of cases by major cancer site, sex, age, year, and 5-year summaries. Figures 9, 10, and 11 illustrate the yearly distribution of leukemia, lymphoma, and brain and CNS tumor cases (children vs adults), and Figure 12 the yearly distribution of lung cancer cases by sex.

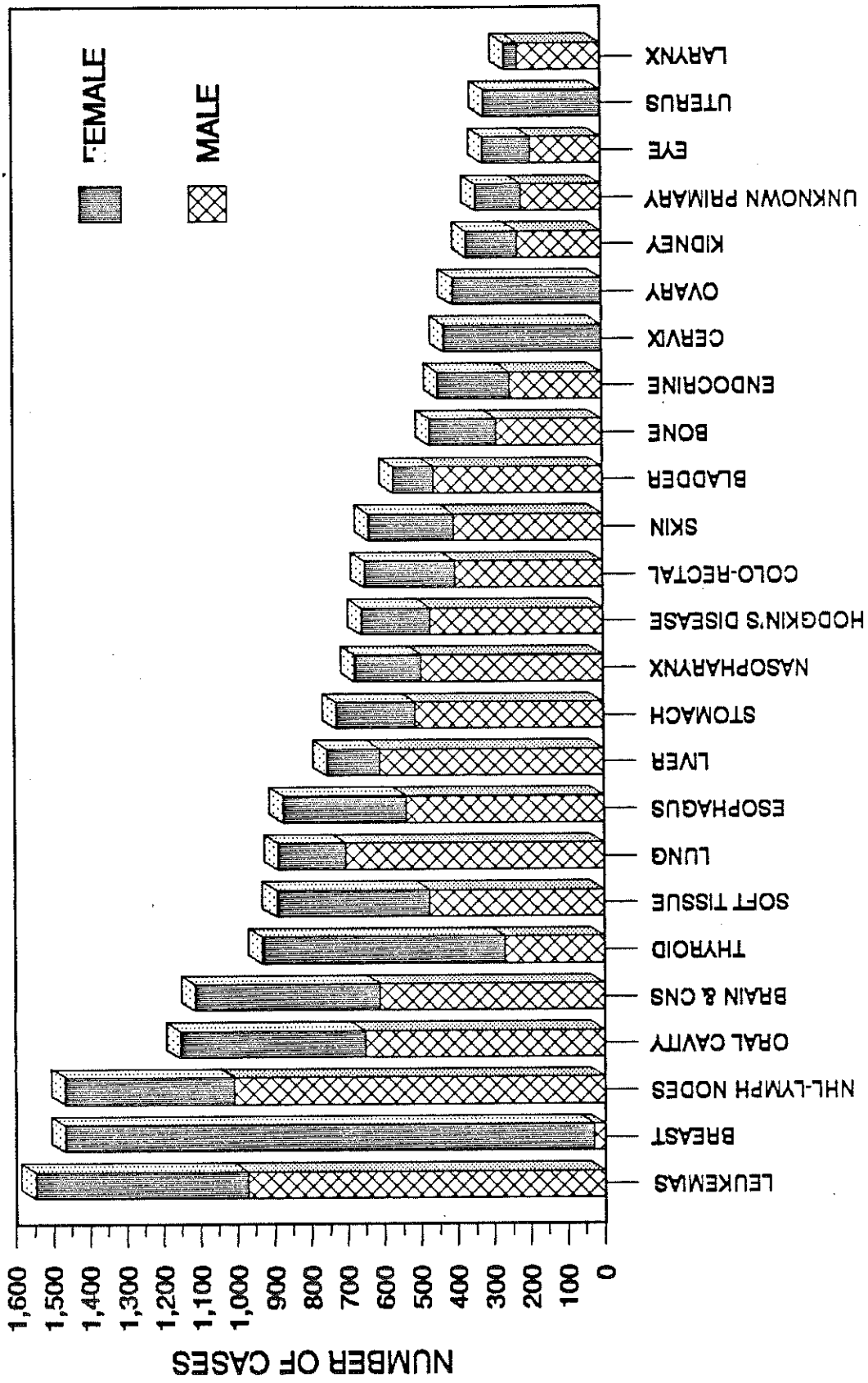


FIGURE 6
DISTRIBUTION OF 25 MOST COMMON MALIGNANCIES
1975 - 1989 (TOTAL CASES = 19,885)

DISTRIBUTION OF 10 MOST COMMON MALIGNANCIES BY SEX
1975 - 1989
FIGURE 7

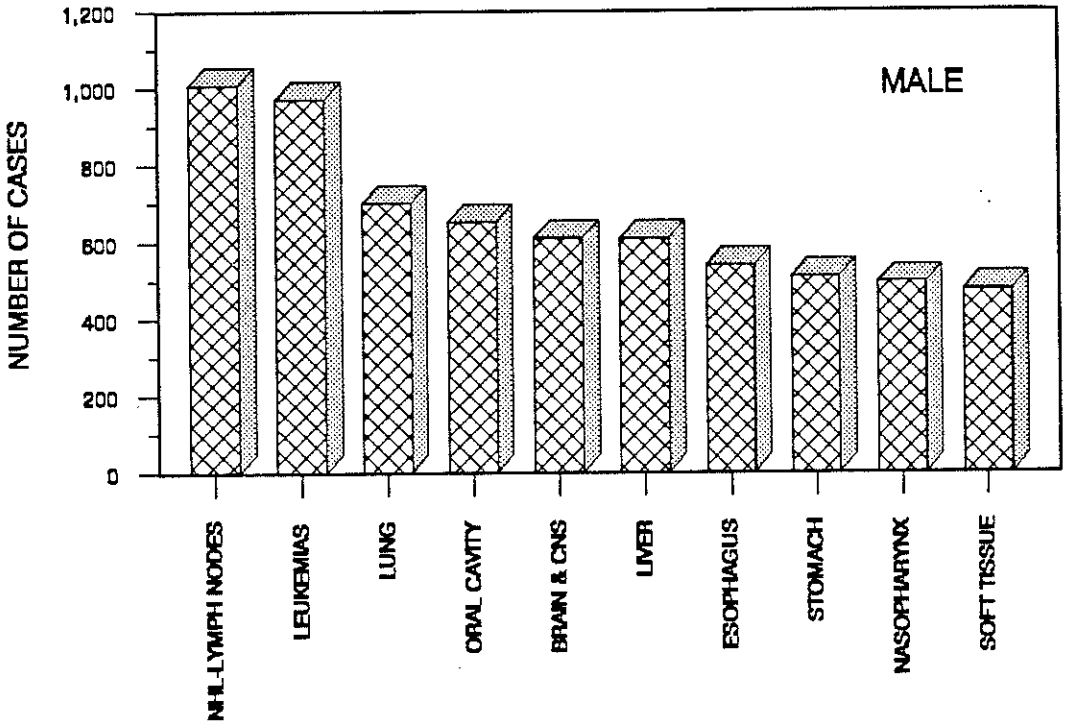


FIGURE 8

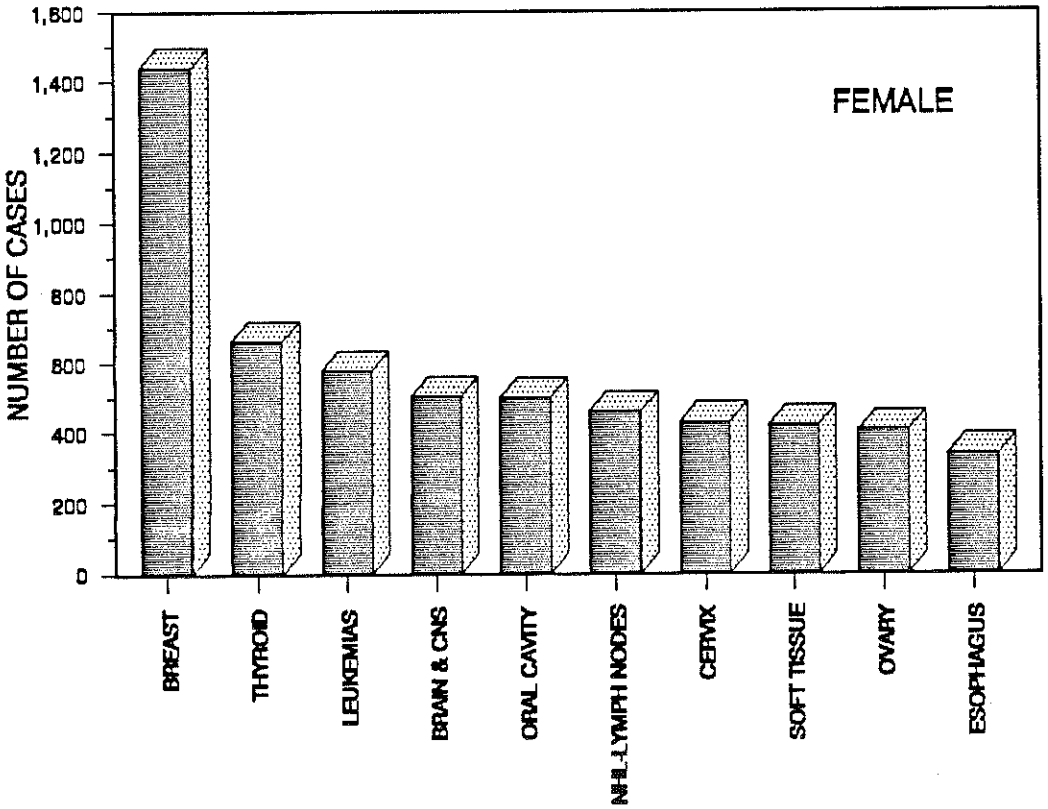


TABLE 1

TOTAL CASES REFERRED TO KFSH BY AGE AND SITE*
FOR THE YEAR(S) 1975 - 1989

ICD-O	DESCRIPTION	0-4	5-9	10-14	15-19	20-24	25-29	30-34	35-39	40-44	45-49	50-54	55-59	60-64	65-69	70-74	75-79	80-84	85+	Total
140-146,148-149	Oral Cavity	5	4	6	12	24	32	44	52	74	92	140	127	185	115	134	50	32	24	1,152
147	Nasopharynx	2	3	24	34	43	34	35	61	66	91	79	53	73	35	24	9	4	6	676
150	Esophagus	0	0	0	1	1	10	10	19	44	58	110	99	182	104	114	52	45	24	873
151	Stomach	0	0	4	1	7	10	19	36	35	69	73	64	114	92	119	45	31	8	727
153-154	Colon, Rectum	2	0	4	4	19	36	44	44	46	73	83	64	97	39	51	22	8	11	647
155	Liver	10	3	1	3	4	10	16	17	44	69	111	98	143	91	76	31	14	12	753
157	Pancreas	2	0	0	0	1	4	3	13	16	20	34	29	38	33	21	10	8	4	236
152,156,158-159	Other GI	7	1	2	4	7	9	10	13	28	20	33	17	33	22	16	12	3	3	240
161	Larynx	2	2	1	0	1	2	6	10	16	17	31	35	50	32	24	17	7	6	259
162-163	Lung	5	0	0	3	6	4	17	26	56	74	108	119	176	133	92	40	24	4	887
169(973)	Multiple Myeloma	0	0	0	0	1	1	6	12	20	17	31	19	28	23	20	10	5	2	195
169(982)	Lymphoid Leukemia	195	164	91	66	40	24	16	14	12	21	17	18	26	14	15	4	7	1	745
169(986)	Myeloid Leukemia	46	52	48	65	62	62	67	51	56	49	54	42	30	17	15	8	4	1	729
169(980-1,983-5,987-94)	Other Leukemias	12	5	6	4	3	5	5	4	7	1	2	1	5	6	5	0	2	1	74
170	Bone, Cartilage	11	43	90	98	74	38	36	15	13	15	7	2	10	9	5	1	1	1	469
171	Soft Tissue Sarcoma	189	80	56	69	84	57	39	60	45	43	44	31	40	25	18	6	3	3	892
172	Skin Melanoma	1	1	1	0	2	4	6	2	9	11	12	12	21	8	11	5	5	0	111
173	Other Skin Cancer	11	3	7	6	17	19	27	31	44	56	67	66	91	45	75	20	29	23	637
174-175	Breast	0	0	0	2	22	84	155	223	223	242	185	120	98	56	35	11	9	2	1,467
179,181-182,184	Uterus, Genital	3	0	1	22	24	39	17	21	36	26	29	23	32	16	12	5	8	3	317
180	Cervix	0	0	0	0	2	18	38	61	54	62	43	39	53	28	16	10	4	1	429
183	Ovary	4	4	13	25	26	22	22	23	25	47	48	38	41	28	28	7	2	1	404
185	Prostate	0	0	0	1	0	0	0	1	1	3	12	19	33	40	35	29	29	13	216
186,187	Testis, Genital	10	0	1	3	17	28	25	23	17	16	12	8	7	3	4	1	0	0	175
188	Bladder	8	2	1	2	5	8	17	38	42	43	60	58	84	58	63	47	22	10	568
189	Kidney, Urinary	89	23	5	8	4	5	12	12	19	27	33	36	32	24	20	8	7	2	366
190	Eye	167	20	5	2	2	2	8	5	11	7	14	12	24	10	14	5	9	2	319
191-192	Brain, CNS	110	154	102	81	60	67	71	77	77	66	68	62	48	32	25	11	1	1	1,113
193	Thyroid	3	2	13	33	81	75	93	83	85	100	94	52	75	40	53	33	11	3	929
194	Other Endocrine	74	25	31	25	44	35	35	40	39	27	33	21	11	2	4	0	0	0	446
196(959,967-970)	NHL - Lymph Nodes	144	128	44	62	74	70	75	82	92	89	113	101	141	83	84	41	28	15	1,466
196(965,966)	Hodgkin's Disease	28	84	81	92	73	54	59	43	25	31	27	12	19	10	6	4	7	1	656
196(972)	Histiocytoses	33	7	6	5	6	12	6	1	1	1	2	3	1	0	2	0	0	0	86
199	Primary Unknown	2	3	1	3	2	6	9	19	23	26	38	40	66	41	34	15	5	6	339
All Others	******	31	9	12	16	13	12	5	19	16	24	26	17	24	16	26	10	8	3	287
TOTALS		1206	822	657	752	851	898	1053	1251	1417	1633	1873	1557	2131	1330	1296	579	382	197	19,885

* Includes Benign Cases that are Reportable by Agreement of Tumor Committee and Multiple Primary Neoplasms.

TABLE 2

MALE CASES REFERRED TO KFSH BY AGE AND SITE*
FOR THE YEAR(S) 1975 - 1989

ICD-O	DESCRIPTION	0-4	5-9	10-14	15-19	20-24	25-29	30-34	35-39	40-44	45-49	50-54	55-59	60-64	65-69	70-74	75-79	80-84	85+	Total
140-146,148-149	Oral Cavity	4	2	4	5	15	10	21	20	31	33	70	80	107	77	91	39	24	19	652
147	Nasopharynx	2	2	16	21	26	25	27	47	50	64	63	42	60	25	14	4	2	4	494
150	Esophagus	0	0	0	1	1	6	2	9	13	26	58	65	117	73	73	39	35	20	538
151	Stomach	0	0	2	0	3	6	12	19	20	38	53	49	71	72	92	38	27	8	510
153-154	Colon, Rectum	0	0	2	3	10	23	26	22	27	43	47	37	61	27	40	15	7	10	400
155	Liver	9	3	0	1	3	6	12	9	33	50	85	85	117	81	60	31	12	11	608
157	Pancreas	1	0	0	0	1	2	2	9	13	18	22	20	20	28	17	10	6	3	172
152,156,158-159	Other GI	1	0	1	2	2	7	5	6	15	11	18	9	18	8	8	8	1	2	122
161	Larynx	2	2	0	0	1	1	3	5	14	13	27	32	44	29	23	15	7	6	224
162-163	Lung	5	0	0	2	5	1	15	18	45	56	78	94	144	115	73	30	17	4	702
169(973)	Multiple Myeloma	0	0	0	0	1	1	4	7	11	12	19	11	20	17	18	7	4	2	134
169(982)	Lymphoid Leukemia	128	112	57	45	25	18	8	10	5	14	14	13	22	12	10	4	5	1	503
169(986)	Myeloid Leukemia	24	33	28	43	30	31	33	34	32	29	28	28	21	10	8	5	3	1	421
169(980-1,983-5,987-94)	Other Leukemias	7	3	6	3	2	0	3	1	4	0	2	1	4	5	4	0	1	1	47
170	Bone, Cartilage	7	24	49	61	50	25	23	7	7	8	5	2	5	7	4	1	1	1	287
171	Soft Tissue Sarcoma	86	50	32	36	46	33	21	27	24	17	23	16	25	17	12	5	2	2	474
172	Skin Melanoma	1	1	1	0	2	2	2	2	6	8	8	8	13	5	8	3	4	0	74
173	Other Skin Cancer	7	1	5	2	9	8	16	17	28	36	42	46	62	27	50	12	17	18	403
174-175	Breast	0	0	0	0	0	0	0	0	3	3	3	5	4	3	4	1	1	1	28
179,181-182,184	Uterus, Genital	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
180	Cervix	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
183	Ovary	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
185	Prostate	0	0	0	1	0	0	0	1	1	3	12	19	33	40	35	29	29	13	216
186,187	Testis, Genital	10	0	1	3	17	28	25	23	17	16	12	8	7	3	4	1	0	0	175
188	Bladder	6	1	1	2	3	4	14	29	30	37	48	47	67	47	50	41	22	8	457
189	Kidney, Urinary	49	13	2	6	1	3	4	4	11	14	19	27	24	21	18	4	5	2	227
190	Eye	95	16	1	0	1	1	5	2	8	4	4	10	16	7	7	4	7	0	188
191-192	Brain, CNS	68	81	59	48	40	39	40	33	29	32	27	40	28	25	15	6	0	0	610
193	Thyroid	2	1	5	4	16	8	21	24	22	36	22	17	33	17	20	12	6	2	268
194	Other Endocrine	40	13	20	11	21	19	20	26	25	16	18	9	9	0	2	0	0	0	249
196(959,967-970)	NHL - Lymph Nodes	97	94	31	36	49	42	51	56	68	59	76	64	92	67	58	30	26	11	1,007
196(965,966)	Hodgkin's Disease	25	65	59	55	48	45	45	30	20	21	18	9	9	7	3	2	6	1	468
196(972)	Histiocytoses	21	6	2	5	4	10	6	1	0	1	1	2	0	0	2	0	0	0	61
199	Primary Unknown	1	2	1	1	2	2	7	14	18	10	25	23	45	24	22	11	2	5	215
All Others	******	20	7	7	9	7	6	4	14	10	11	15	9	16	10	19	7	3	3	177
TOTALS		718	532	392	406	441	412	477	526	640	739	962	927	1314	906	864	414	282	159	11,111

* Includes Benign Cases that are Reportable by Agreement of Tumor Committee and Multiple Primary Neoplasms.

TABLE 3

FEMALE CASES REFERRED TO KFSH BY AGE AND SITE*
FOR THE YEAR(S) 1975 - 1989

ICD-O	DESCRIPTION	0-4	5-9	10-14	15-19	20-24	25-29	30-34	35-39	40-44	45-49	50-54	55-59	60-64	65-69	70-74	75-79	80-84	85+	Total
140-146,148-149	Oral Cavity	1	2	2	7	9	22	23	32	43	59	70	47	78	38	43	11	8	5	500
147	Nasopharynx	0	1	8	13	17	9	8	14	16	27	16	11	13	10	10	5	2	2	182
150	Esophagus	0	0	0	0	0	4	8	10	31	32	52	34	65	31	41	13	10	4	335
151	Stomach	0	0	2	1	4	4	7	17	15	31	20	15	43	20	27	7	4	0	217
153-154	Colon, Rectum	2	0	2	1	9	13	18	22	19	30	36	27	36	12	11	7	1	1	247
155	Liver	1	0	1	2	1	4	4	8	11	19	26	13	26	10	16	0	2	1	145
157	Pancreas	1	0	0	0	0	2	1	4	3	2	12	9	18	5	4	0	2	1	64
152,156,158-159	Other GI	6	1	1	2	5	2	5	7	13	9	15	8	15	14	8	4	2	1	118
161	Larynx	0	0	1	0	0	1	3	5	2	4	4	3	6	3	1	2	0	0	35
162-163	Lung	0	0	0	1	1	3	2	8	11	18	30	25	32	18	19	10	7	0	185
169(973)	Multiple Myeloma	0	0	0	0	0	0	2	5	9	5	12	8	8	6	2	3	1	0	61
169(982)	Lymphoid Leukemia	67	52	34	21	15	6	8	4	7	7	3	5	4	2	5	0	2	0	242
169(986)	Myeloid Leukemia	22	19	20	22	32	31	34	17	24	20	26	14	9	7	7	3	1	0	308
169(980-1,983-5,987-94)	Other Leukemias	5	2	0	1	1	5	2	3	3	1	0	0	1	1	1	0	1	0	27
170	Bone, Cartilage	4	19	41	37	24	13	13	8	6	7	2	0	5	2	1	0	0	0	182
171	Soft Tissue Sarcoma	103	30	24	33	38	24	18	33	21	26	21	15	15	8	6	1	1	1	418
172	Skin Melanoma	0	0	0	0	0	2	4	0	3	3	4	4	8	3	3	2	1	0	37
173	Other Skin Cancer	4	2	2	4	8	11	11	14	16	20	25	20	29	18	25	8	12	5	234
174-175	Breast	0	0	0	2	22	84	155	223	220	239	182	115	94	53	31	10	8	1	1,439
179,181-182,184	Uterus, Genital	3	0	1	22	24	39	17	21	36	26	29	23	32	16	12	5	8	3	317
180	Cervix	0	0	0	0	2	18	38	61	54	62	43	39	53	28	16	10	4	1	429
183	Ovary	4	4	13	25	26	22	22	23	25	47	48	38	41	28	28	7	2	1	404
185	Prostate	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
186,187	Testis, Genital	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
188	Bladder	2	1	0	0	2	4	3	9	12	6	12	11	17	11	13	6	0	2	111
189	Kidney, Urinary	40	10	3	2	3	2	8	8	8	13	14	9	8	3	2	4	2	0	139
190	Eye	72	4	4	2	1	1	3	3	3	3	10	2	8	3	7	1	2	2	131
191-192	Brain, CNS	42	73	43	33	20	28	31	44	48	34	41	22	20	7	10	5	1	1	503
193	Thyroid	1	1	8	29	65	67	72	59	63	64	72	35	42	23	33	21	5	1	661
194	Other Endocrine	34	12	11	14	23	16	15	14	14	11	15	12	2	2	2	0	0	0	197
196(959,967-970)	NHL - Lymph Nodes	47	34	13	26	25	28	24	26	24	30	37	37	49	16	26	11	2	4	459
196(965,966)	Hodgkin's Disease	3	19	22	37	25	9	14	13	5	10	9	3	10	3	3	2	1	0	188
196(972)	Histiocytoses	12	1	4	0	2	2	0	0	1	0	1	1	1	0	0	0	0	0	25
199	Primary Unknown	1	1	0	2	0	4	2	5	5	16	13	17	21	17	12	4	3	1	124
• All Others	******	11	2	5	7	6	6	1	5	6	13	11	8	8	6	7	3	5	0	110
TOTALS		488	290	265	346	410	486	576	725	777	894	911	630	817	424	432	165	100	38	8,774

* Includes Benign Cases that are Reportable by Agreement of Tumor Committee and Multiple Primary Neoplasms.

TABLE 4

TOTAL CASES REFERRED TO KFSH BY YEAR AND SITE*
FOR THE YEAR(S) 1975 - 1989

ICD-O	DESCRIPTION	1975	1976	1977	1978	1979	1980	1981	1982	1983	1984	1985	1986	1987	1988	1989	Total
140-146,148-149	Oral Cavity	1	14	36	81	71	70	58	85	103	88	104	81	111	138	111	1,152
147	Nasopharynx	3	11	38	35	38	35	48	46	63	46	45	52	87	67	62	676
150	Esophagus	1	15	51	62	70	66	59	62	75	76	56	68	79	66	67	873
151	Stomach	2	16	36	36	49	38	53	52	72	63	52	76	68	58	56	727
153-154	Colon, Rectum	1	13	22	24	31	38	49	39	41	61	47	52	78	87	64	647
155	Liver	7	15	33	44	50	33	42	56	52	66	56	85	75	71	68	753
157	Pancreas	1	5	7	11	16	12	21	21	13	20	17	27	19	18	28	236
152,156,158-159	Other GI	1	7	10	10	12	18	12	14	13	19	20	25	34	25	20	240
161	Larynx	1	5	11	11	14	17	23	14	23	21	26	16	24	32	21	259
162-163	Lung	3	11	24	34	44	39	51	63	78	77	90	86	86	110	91	887
169(973)	Multiple Myeloma	1	5	6	11	9	10	7	12	13	12	19	13	27	20	30	195
169(982)	Lymphoid Leukemia	4	14	16	38	29	33	48	69	65	48	61	84	87	74	75	745
169(986)	Myeloid Leukemia	3	13	23	44	50	34	55	50	42	72	54	72	82	67	68	729
169(980-1,983-5,987-94)	Other Leukemias	0	1	3	5	8	4	5	5	9	7	4	3	7	7	6	74
170	Bone, Cartilage	1	7	15	27	22	24	27	45	35	48	28	40	46	51	53	469
171	Soft Tissue Sarcoma	3	16	31	41	40	43	51	48	63	68	73	82	118	99	116	892
172	Skin Melanoma	0	4	4	8	8	6	8	4	11	12	9	8	11	12	6	111
173	Other Skin Cancer	2	15	26	31	46	37	46	53	52	54	64	68	44	47	52	637
174-175	Breast	3	23	53	46	57	61	100	108	109	151	131	125	173	190	137	1,467
179,181-182,184	Uterus, Genital	0	2	10	10	18	10	17	16	40	22	20	33	40	39	40	317
180	Cervix	0	10	18	18	23	18	22	25	34	31	41	55	52	50	32	429
183	Ovary	2	9	10	10	17	22	23	38	33	28	23	38	46	51	54	404
185	Prostate	0	7	5	4	5	11	11	18	26	17	21	16	22	26	27	216
186,187	Testis, Genital	0	4	10	8	13	9	15	12	11	15	13	14	18	20	13	175
188	Bladder	4	7	12	23	29	37	35	23	41	37	45	51	78	74	72	568
189	Kidney, Urinary	0	9	18	19	18	16	18	32	23	20	25	44	33	57	34	366
190	Eye	0	6	11	18	11	22	26	34	25	17	30	22	32	41	24	319
191-192	Brain, CNS	5	30	35	61	43	42	54	108	68	73	68	109	139	141	137	1,113
193	Thyroid	2	8	18	32	38	46	61	56	74	72	66	92	128	121	115	929
194	Other Endocrine	2	11	15	11	21	27	29	30	39	49	38	42	42	54	36	446
196(959,967-970)	NHL - Lymph Nodes	4	19	63	73	97	98	119	103	150	126	119	115	119	115	146	1,466
196(965,966)	Hodgkin's Disease	13	19	40	41	32	38	44	42	53	50	49	44	62	56	73	656
196(972)	Histiocytoses	0	2	7	4	4	3	7	4	6	7	5	10	8	9	10	86
199	Primary Unknown	3	11	23	20	19	23	29	22	26	23	18	17	31	29	45	339
All Others	******	1	4	14	15	9	12	12	16	15	17	20	28	56	41	27	287
TOTALS		74	368	754	966	1061	1052	1285	1425	1596	1613	1557	1793	2162	2163	2016	19,885

* Includes Benign Cases that are Reportable by Agreement of Tumor Committee and Multiple Primary Neoplasms.

TABLE 5

TOTAL CASES REFERRED TO KFSH BY SITE FOR THE YEAR(S) 1975 - 1989 FIVE-YEAR SUMMARIES

ICD-O	DESCRIPTION	75-79	80-84	85-89	TOTAL
140-146,148-149	Oral Cavity	203	404	545	1,152
147	Nasopharynx	125	238	313	676
150	Esophagus	199	338	336	873
151	Stomach	139	278	310	727
153-154	Colon, Rectum	91	228	328	647
155	Liver	149	249	355	753
157	Pancreas	40	87	109	236
152,156,158-159	Other G.I.	40	76	124	240
161	Larynx	42	98	119	259
162-163	Lung	116	308	463	887
169(973)	Multiple Myeloma	32	54	109	195
169(982)	Lymphoid Leukemia	101	263	381	745
169(986)	Myeloid Leukemia	133	253	343	729
169	Other Leukemias	17	30	27	74
170	Bone, Cartilage	72	179	218	469
171	Soft Tissue Sarcoma	131	273	488	892
172	Skin Melanoma	24	41	46	111
173	Other Skin Cancer	120	242	275	637
174-175	Breast	182	529	756	1,467
179,181-182,184	Uterus, Genital	40	105	172	317
180	Cervix	69	130	230	429
183	Ovary	48	144	212	404
185	Prostate	21	83	112	216
186-187	Testis, Genital	35	62	78	175
188	Bladder	75	173	320	568
189	Kidney, Urinary	64	109	193	366
190	Eye	46	124	149	319
191-192	Brain, CNS	174	345	594	1,113
193	Thyroid	98	309	522	929
194	Other Endocrine	60	174	212	446
196(959,967-970)	NHL - Lymph Nodes	256	596	614	1,466
196(965-966)	Hodgkin's Disease	145	227	284	656
196(972)	Histiocytoses	17	27	42	86
199	Primary Unknown	76	123	140	339
All Others	******	43	72	172	287
TOTALS		**3,223**	**6,971**	**9,691**	**19,885**

TABLE 6

MALE CASES REFERRED TO KFSH BY SITE FOR THE YEAR(S) 1975 - 1989 FIVE-YEAR SUMMARIES

ICD-O	DESCRIPTION	75-79	80-84	85-89	TOTAL
140-146,148-149	Oral Cavity	120	218	314	652
147	Nasopharynx	95	175	224	494
150	Esophagus	134	209	195	538
151	Stomach	102	197	211	510
153-154	Colon, Rectum	62	135	203	400
155	Liver	129	200	279	608
157	Pancreas	33	67	72	172
152,156,158-159	Other G.I.	25	36	61	122
161	Larynx	37	84	103	224
162-163	Lung	96	239	367	702
169(973)	Multiple Myeloma	21	36	77	134
169(982)	Lymphoid Leukemia	79	174	250	503
169(986)	Myeloid Leukemia	87	138	196	421
169	Other Leukemias	9	18	20	47
170	Bone, Cartilage	44	108	135	287
171	Soft Tissue Sarcoma	69	155	250	474
172	Skin Melanoma	18	27	29	74
173	Other Skin Cancer	90	153	160	403
174-175	Breast	7	10	11	28
179,181-182,184	Uterus, Genital	0	0	0	0
180	Cervix	0	0	0	0
183	Ovary	0	0	0	0
185	Prostate	21	83	112	216
186-187	Testis, Genital	35	62	78	175
188	Bladder	62	140	255	457
189	Kidney, Urinary	40	70	117	227
190	Eye	31	75	82	188
191-192	Brain, CNS	113	196	301	610
193	Thyroid	36	106	126	268
194	Other Endocrine	36	91	122	249
196(959,967-970)	NHL - Lymph Nodes	196	396	415	1,007
196(965-966)	Hodgkin's Disease	108	167	193	468
196(972)	Histiocytoses	9	21	31	61
199	Primary Unknown	51	76	88	215
All Others	******	24	42	111	177
TOTALS		**2,019**	**3,904**	**5,188**	**11,111**

TABLE 7

FEMALE CASES REFERRED TO KFSH BY SITE FOR THE YEAR(S) 1975 - 1989 FIVE-YEAR SUMMARIES

ICD-O	DESCRIPTION	75-79	80-84	85-89	TOTAL
140-146,148-149	Oral Cavity	83	186	231	500
147	Nasopharynx	30	63	89	182
150	Esophagus	65	129	141	335
151	Stomach	37	81	99	217
153-154	Colon, Rectum	29	93	125	247
155	Liver	20	49	76	145
157	Pancreas	7	20	37	64
152,156,158-159	Other G. I.	15	40	63	118
161	Larynx	5	14	16	35
162-163	Lung	20	69	96	185
169(973)	Multiple Myeloma	11	18	32	61
169(982)	Lymphoid Leukemia	22	89	131	242
169(986)	Myeloid Leukemia	46	115	147	308
169	Other Leukemia	8	12	7	27
170	Bone, Cartilage	28	71	83	182
171	Soft Tissue Sarcoma	62	118	238	418
172	Skin Melanoma	6	14	17	37
173	Other Skin Cancer	30	89	115	234
174-175	Breast	175	519	745	1,439
179,181-182,184	Uterus, Genital	40	105	172	317
180	Cervix	69	130	230	429
183	Ovary	48	144	212	404
185	Prostate	0	0	0	0
186-187	Testis, Genital	0	0	0	0
188	Bladder	13	33	65	111
189	Kidney, Urinary	24	39	76	139
190	Eye	15	49	67	131
191-192	Brain, CNS	61	149	293	503
193	Thyroid	62	203	396	661
194	Other Endocrine	24	83	90	197
196(959,967-970)	NHL - Lymph Nodes	60	200	199	459
196(965-966)	Hodgkin's Disease	37	60	91	188
196(972)	Histiocytoses	8	6	11	25
199	Primary Unknown	25	47	52	124
All Others	******	19	30	61	110
TOTALS		**1,204**	**3,067**	**4,503**	**8,774**

FIGURE 9

YEARLY DISTRIBUTION OF LEUKEMIA CASES (CHILDREN VS ADULTS)

1975 - 1989

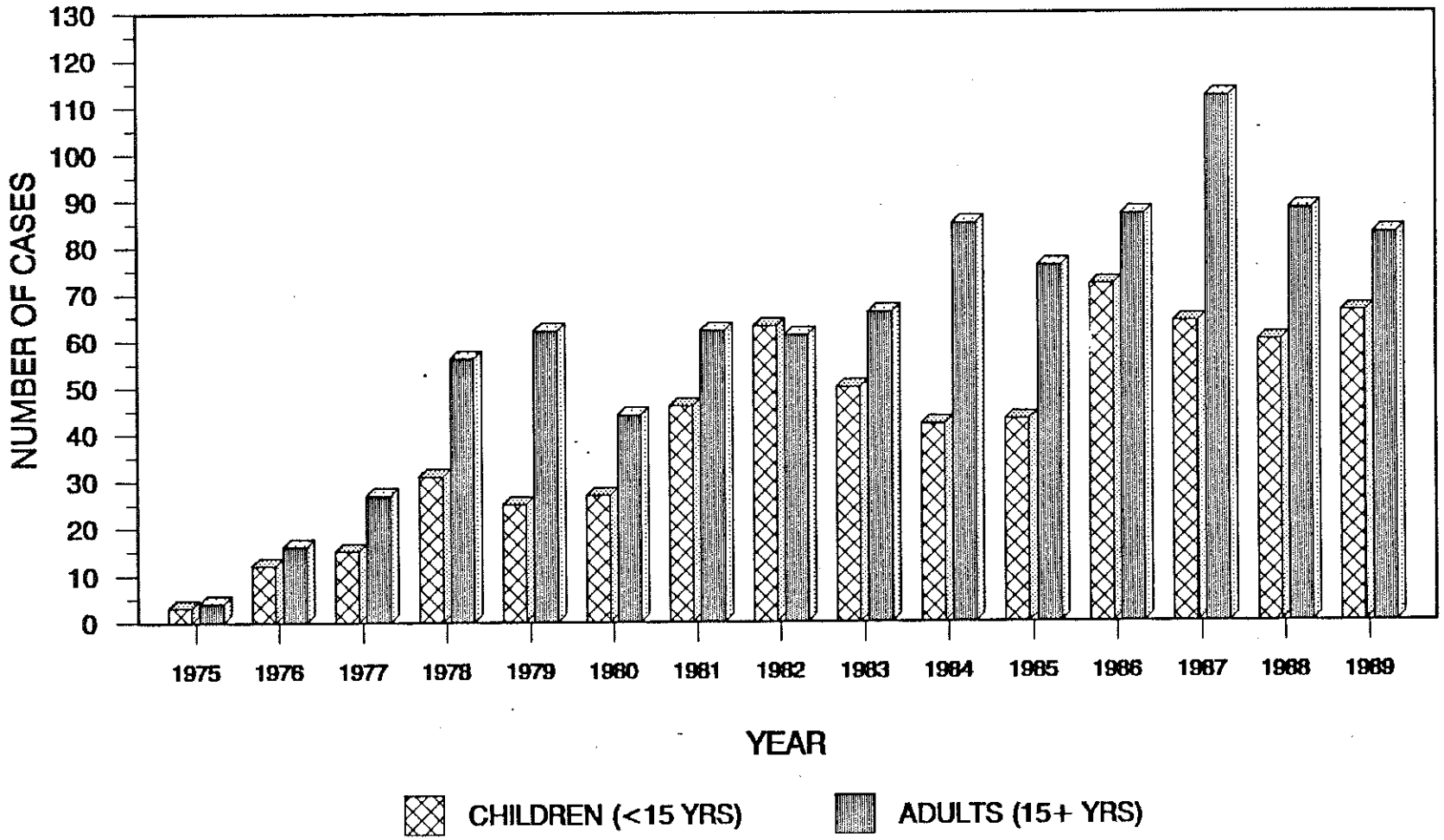


FIGURE 10

YEARLY DISTRIBUTION OF LYMPHOMA CASES (CHILDREN VS ADULTS)

1975 - 1989

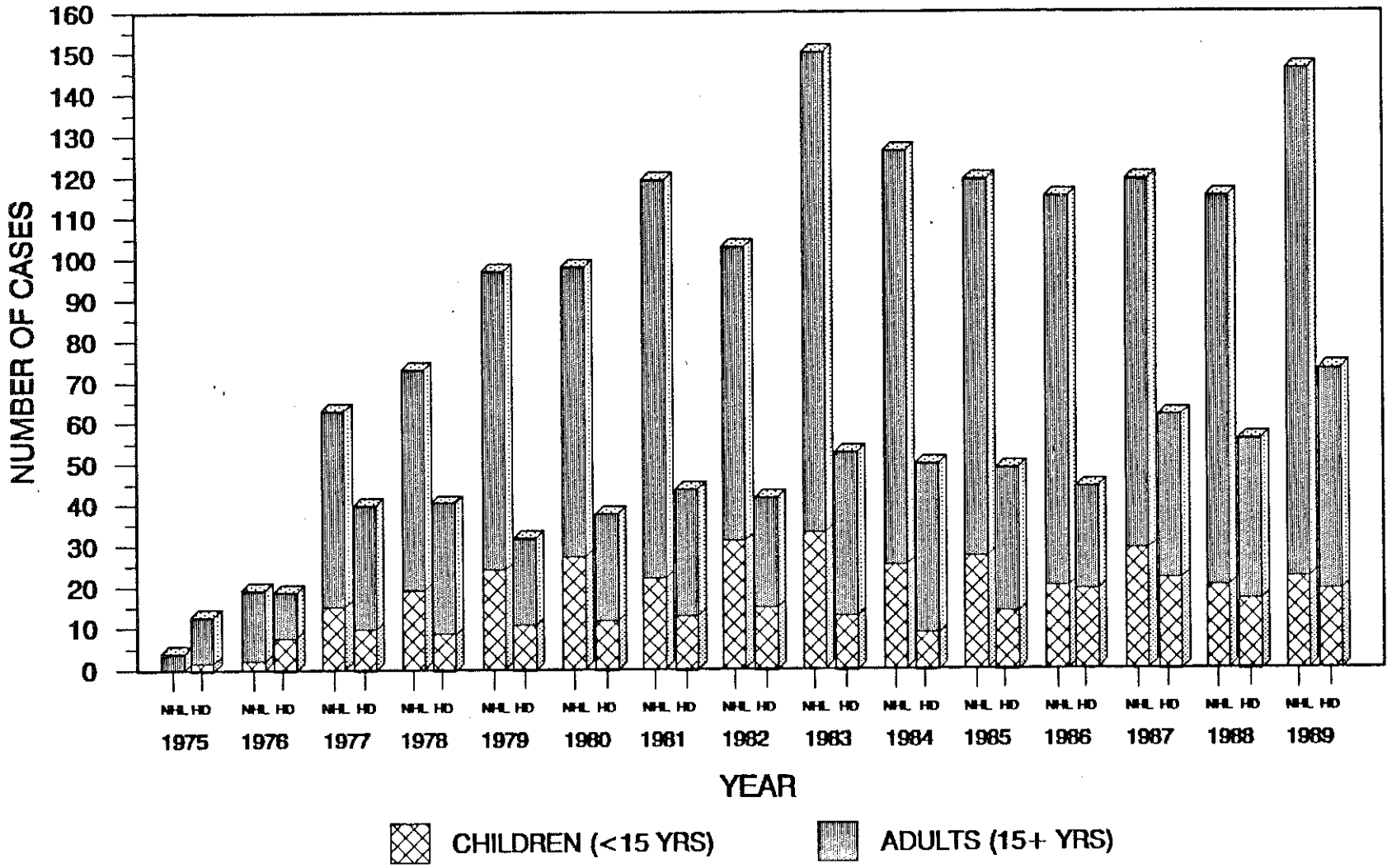


FIGURE 11

YEARLY DISTRIBUTION OF BRAIN & CNS TUMOR CASES (CHILDREN VS ADULTS)

1975 - 1989

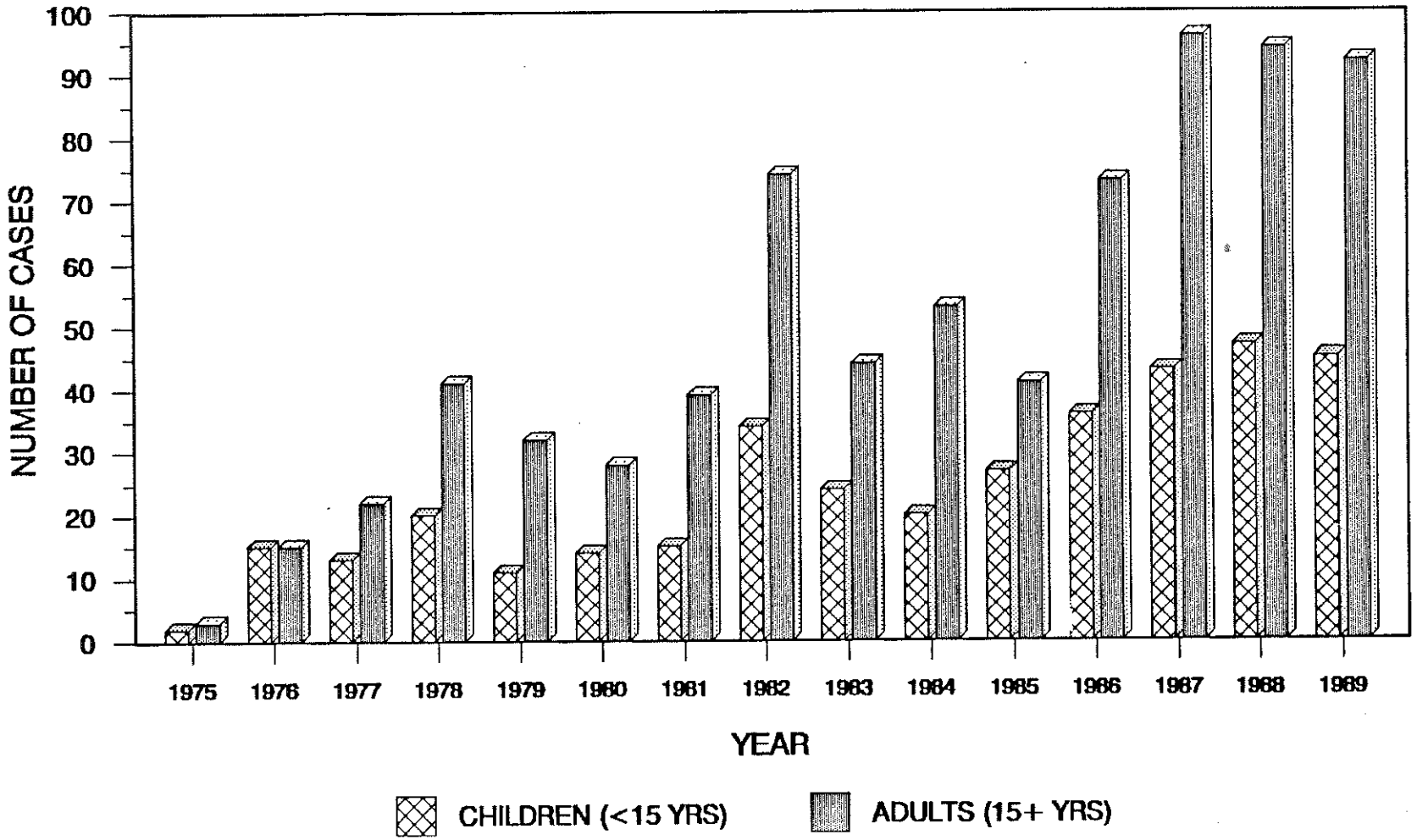
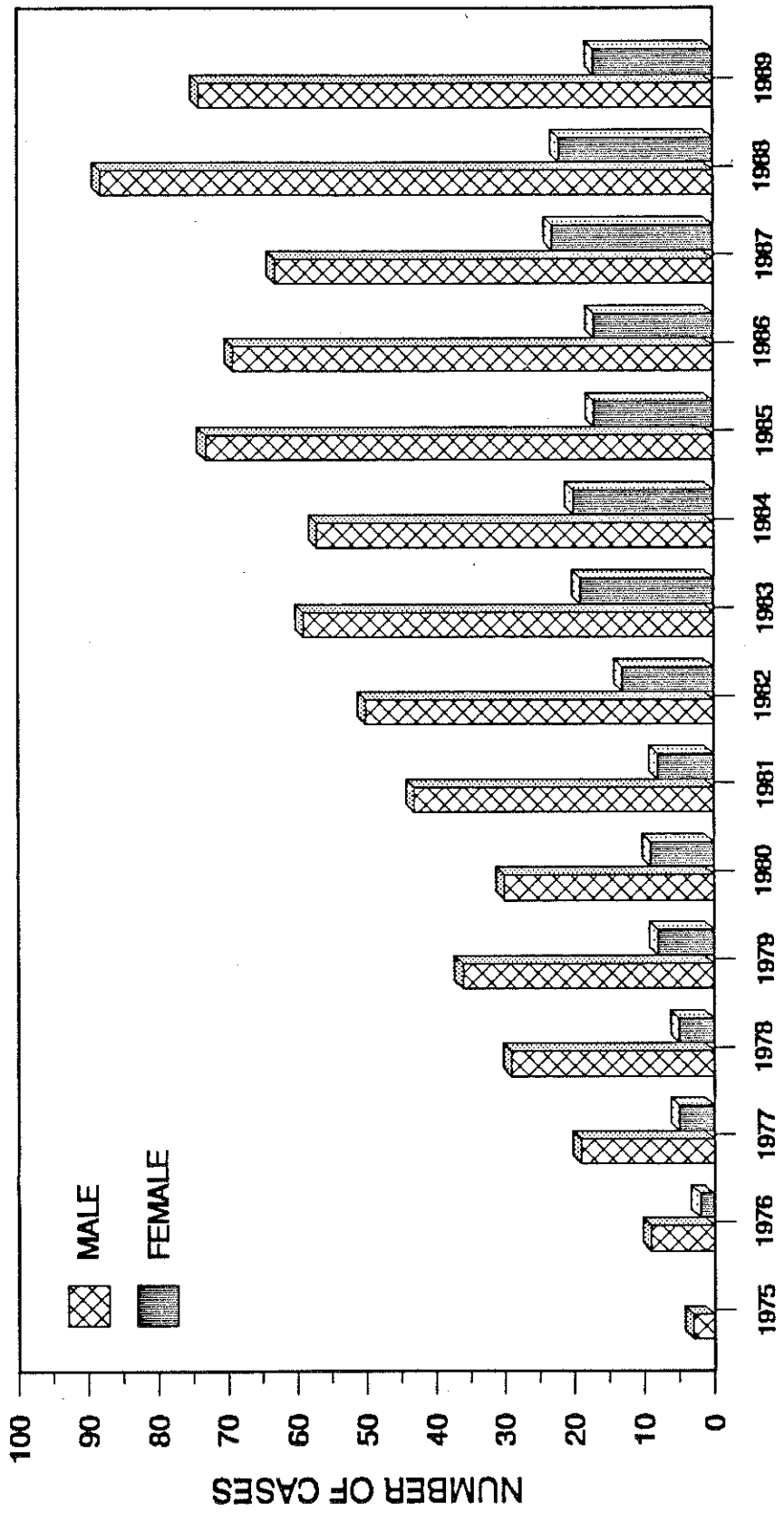


FIGURE 12

YEARLY DISTRIBUTION OF LUNG CASES BY SEX
1975 - 1989



CHILDHOOD MALIGNANCIES IN SAUDI ARABIA

A total of 2,685 cases under age 15 were accessioned between 1975 and 1989 (13.5% of all cases). Boys numbered 1,642 and girls 1,043 (boy:girl ratio was 1.6). Please refer to Figure 13 for age and sex distribution.

The five most common malignancies were:

- Leukemias (619 cases or 23.1% of all childhood malignancies)
- Lymphomas (509 cases or 19.0%)
- Brain/CNS (366 cases or 13.6%)
- Sarcomas (325 cases or 12.1%)
- Eye (192 cases or 7.2%)

The leukemias seen in children are primarily acute lymphocytic leukemia, representing 72.7% (450 cases). Acute non-lymphocytic leukemia accounts for 23.6% (146 cases) and chronic myeloid leukemia for the remaining 3.7% (23 cases).

The childhood lymphomas are composed of 37.9% Hodgkin's Disease (193 cases) and 62.1% Non-Hodgkin's lymphoma (316 cases). Histology in NHL is predominantly diffuse undifferentiated lymphoma (156 cases) and Burkitt's lymphoma (60 cases).

See Figure 14 for illustration of 10 most common malignancies in children referred to KFSH.

FIGURE 13

DISTRIBUTION OF CHILDREN (2,685 CASES) BY AGE
1975 - 1989

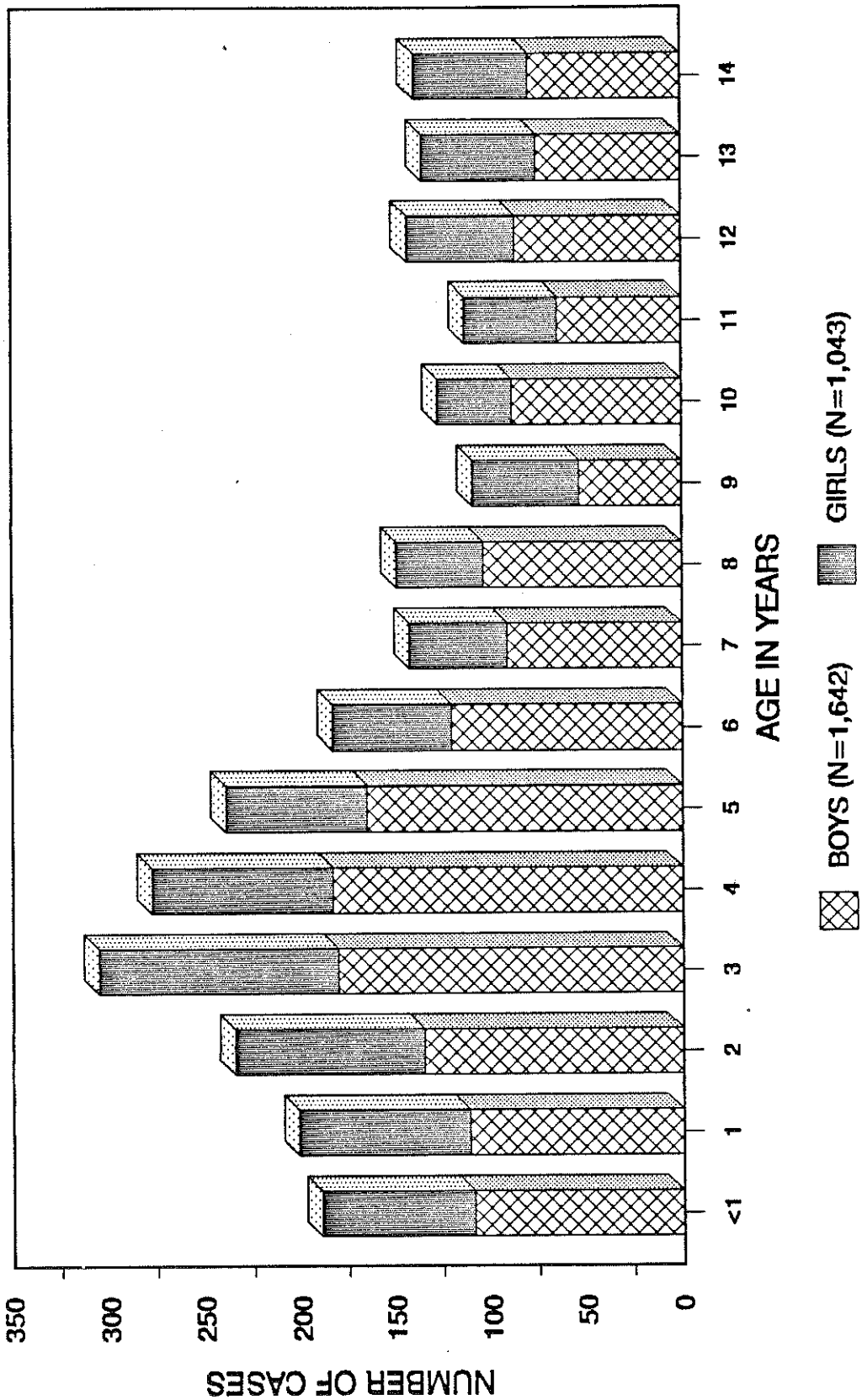
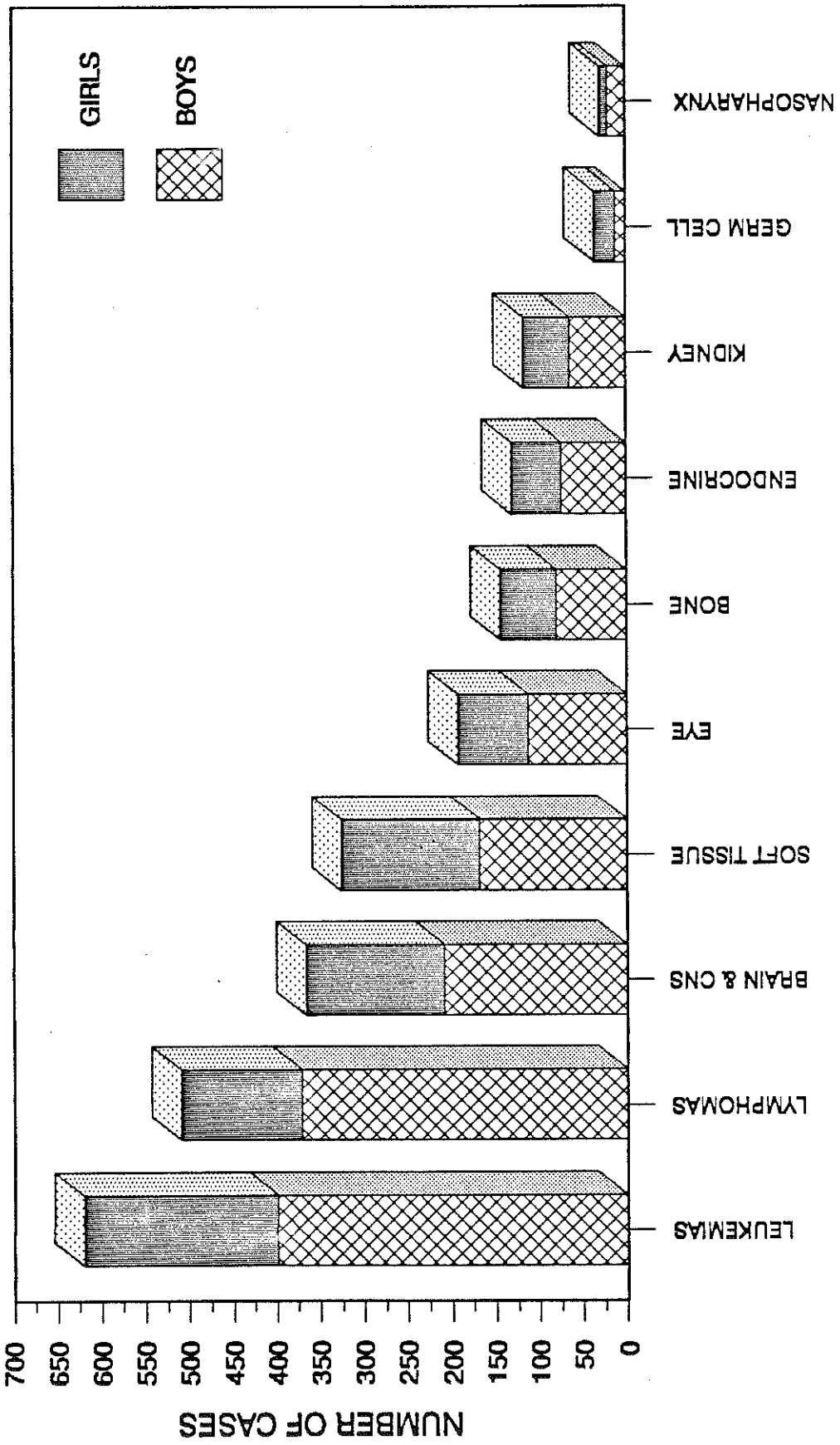


FIGURE 14

DISTRIBUTION OF 10 MOST COMMON MALIGNANCIES IN CHILDREN

1975 - 1989 (TOTAL CASES = 2,685)



III. DESCRIPTION OF THE PATIENT POPULATION - 1989

The total number of cancer patients accessioned in 1989 by the King Faisal Specialist Hospital & Research Centre Tumor Registry was 1,975 (2,016 cases). This represents a slight decrease from 1988.

82.5% of the cases were analytic (defined as cases which were first diagnosed and/or received all or part of their first course of treatment at KFSH&RC).

Males predominated with a total of 1,093 cases (54.2%); females numbered 923 (45.8%). Please refer to Figure 15 for a graphic illustration of the sex distribution of the cases.

Nationality of the patients treated in 1989 was 88.0% (1,774 cases) Saudi Arabian and 12.0% (242 cases) Non-Saudi (Figure 16).

Geographically, the referral pattern is mainly from the Riyadh Region with 26.1% (525 patients), followed by the Eastern and Makkah Regions representing 16.6% and 16.5%, respectively. Please refer to Figure 17 for a summary of the geographical distribution of 1989 patients.

Age distribution of the 1989 patients is illustrated in Figure 18. The mean age is 45.0; the mode 62.0; and the median age 49.2. Children under the age of 15 made up 13.6% (274 children) and adults 86.4% (1,742).

FIGURE 15
DISTRIBUTION OF 2,016 CASES BY SEX
1989

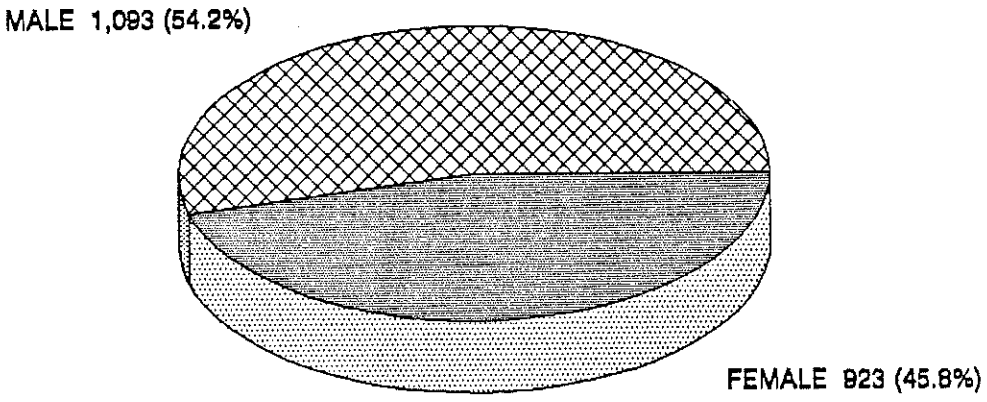


FIGURE 16
DISTRIBUTION OF 2,016 CASES BY NATIONALITY
1989

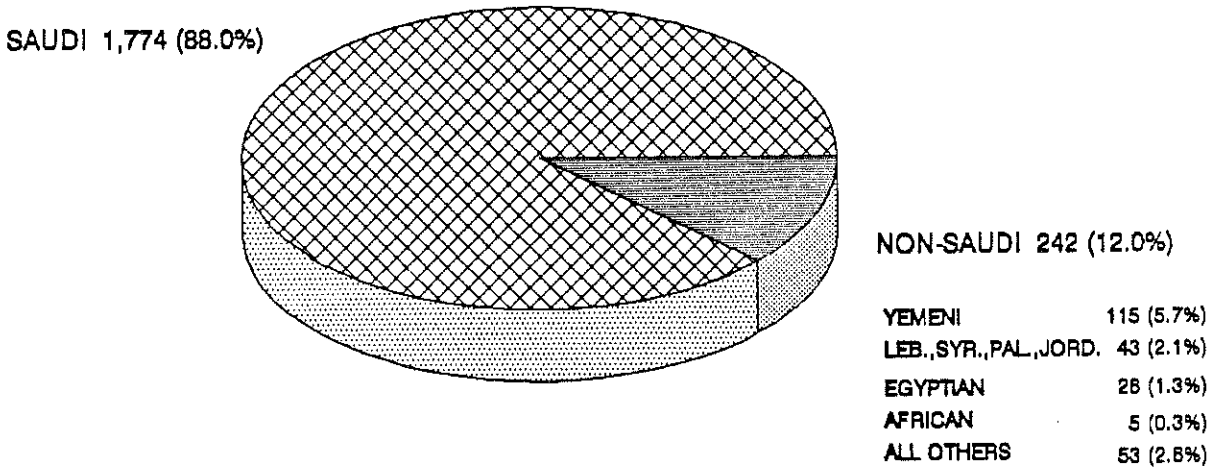
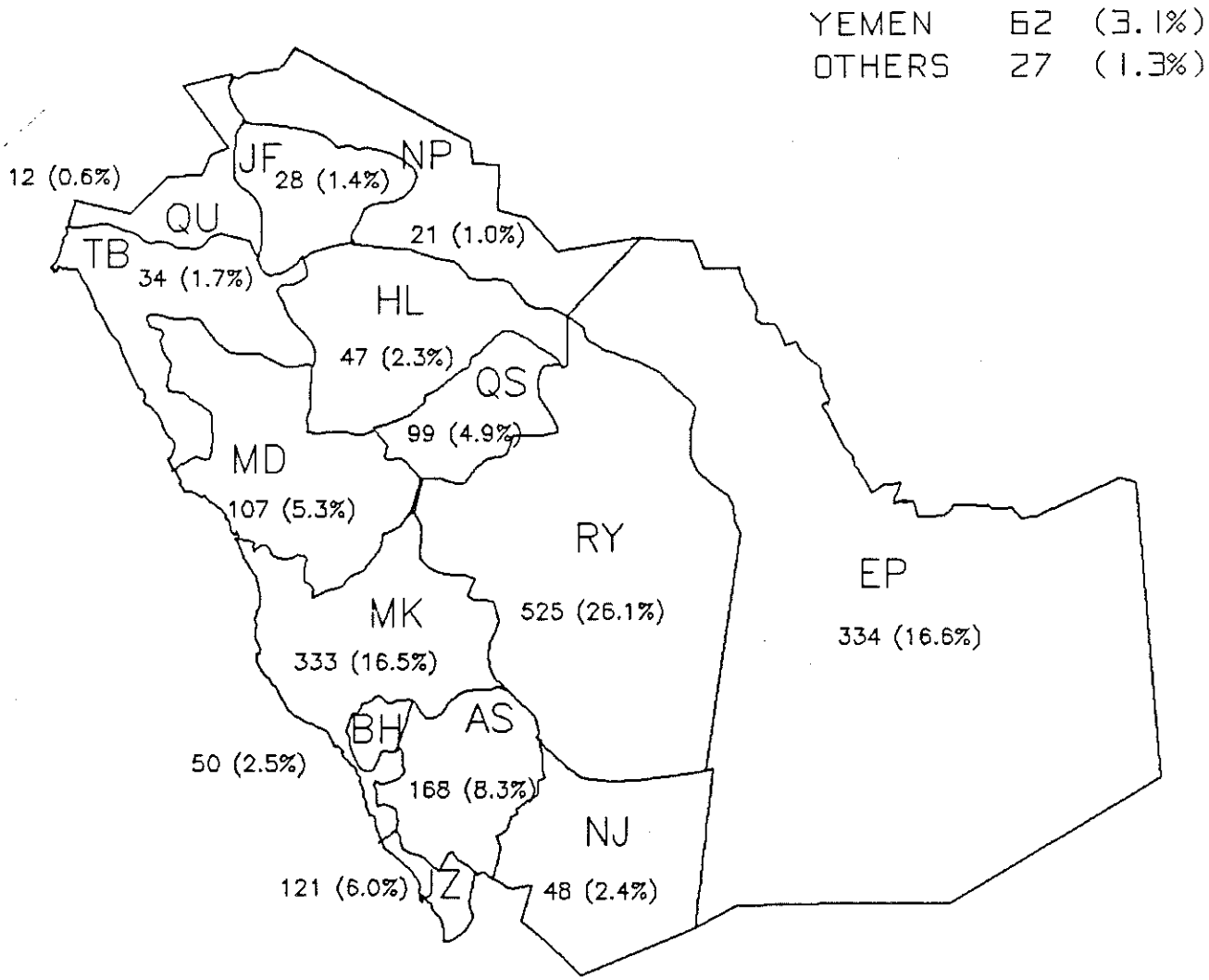


FIGURE 17

DISTRIBUTION OF 2,016 CASES BY GEOGRAPHIC REGION

Based on Given Address at the Time of Diagnosis

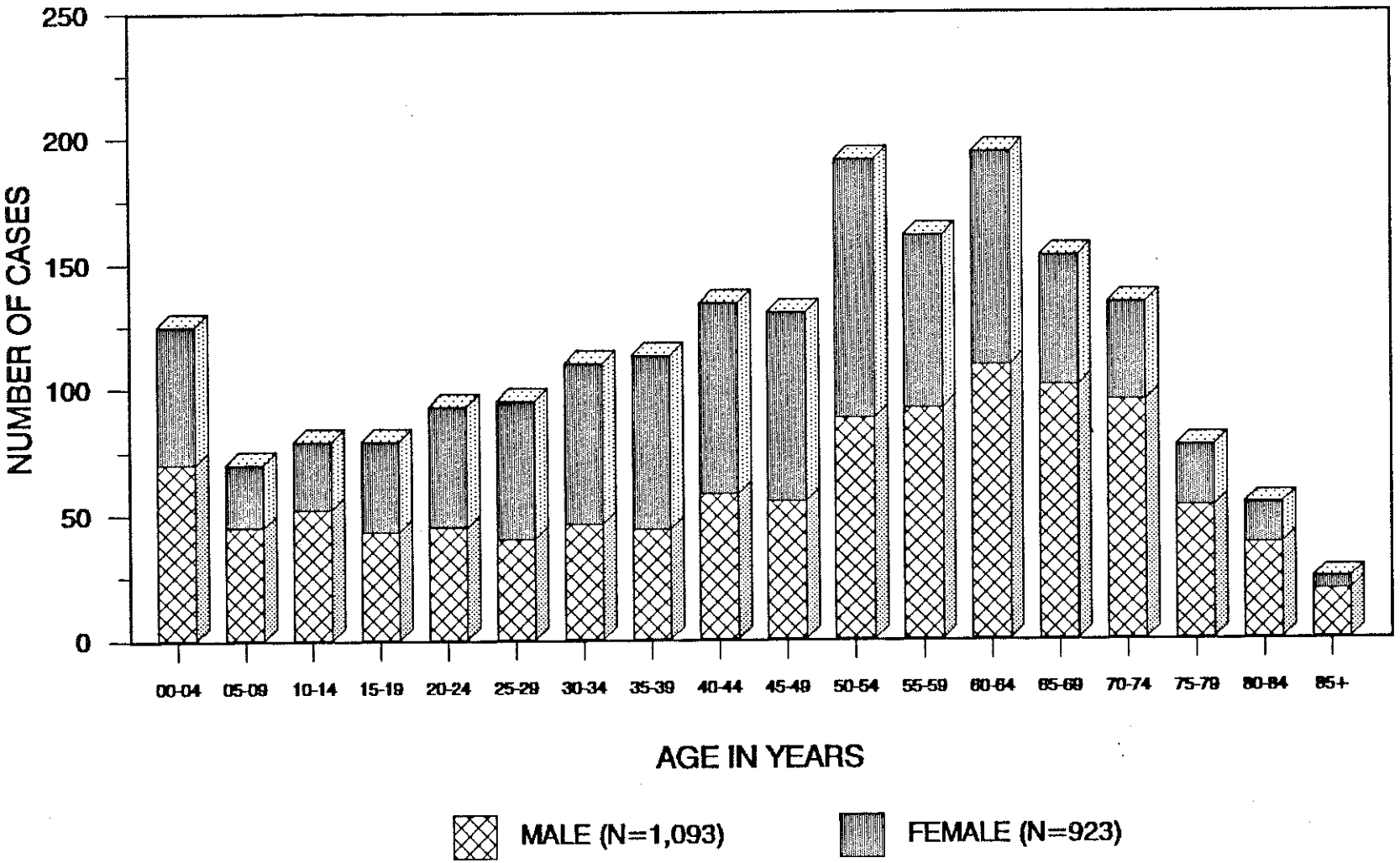
1989



AS - ASIR
BH - AL BAHA
EP - EASTERN PROVINCE
HL - HAIL
JF - AL JAWF
JZ - JIZAN
MD - AL MADINAH
MK - MAKKAH
NJ - NAJRAN
NP - NORTHERN PROVINCE
QS - AL QASIM
QU - AL QURAYYAT
RY - RIYADH
TB - TABUK

FIGURE 18

DISTRIBUTION OF 2,016 CASES BY AGE
1989



IV. PRIMARY ANATOMIC SITE AND HISTOLOGY SUMMARIES

Leukemias led the list of malignancies diagnosed in 1989 (representing 7.4%), followed by non-Hodgkin's lymphoma (7.2%), breast cancer (6.8%), brain/CNS tumors (6.8%), and soft tissue sarcoma (5.8%).

The solid tumors represented 73.0% (1,472 cases), the lymphatic malignancies 11.0% (222 cases), the hematological malignancies 9.0% (182 cases), benign tumors 4.5% (90 cases), and the neoplasms of uncertain behavior totaled 2.5% (50 cases). For detailed statistics by primary site and histology please refer to Table 8, the Primary Site Table. Figures 19, 20, and 21 illustrate the most common malignancies accessioned in 1989.

97.3% of the cases were pathologically confirmed; 1.9% were confirmed radiologically, and less than 1% were diagnosed on the basis of clinical examination.

The lymphomas make up a large proportion of cases. Non-Hodgkin's lymphoma of extra-nodal sites totaled 21 cases. The anatomic locations represented were as follows: stomach (5 cases), tonsil (3 cases), and bone (3 cases). Other sites were nasopharynx (1), colon (1), nasal cavity (1), lung (1), and breast (1).

In 1989, there were 36 patients with two primary malignancies, and one patient with three primary neoplasms. See Table 9 for the list of patients with multiple primaries.

For a breakdown of the number of cases by major cancer site, sex, and age, refer to Tables 10, 11, and 12.

TABLE 8

PRIMARY SITE TABLE
(INCLUDES MULTIPLE PRIMARIES)
1989

SITE (ICD-O CODE) HISTOLOGY	TOTAL CASES	MALES	FEMALES
ALL SITES ALL HISTOLOGIES	**2,016**	**1,093**	**923**
LIP (140)	**9**	**6**	**3**
Squamous Cell Carcinoma	8	6	2
Verrucous Carcinoma	1	0	1
TONGUE (141)	**33**	**20**	**13**
Squamous Cell Carinoma	31	18	13
Carcinoma, NOS	1	1	0
NHL, Large Cell	1	1	0
MAJOR SALIVARY GLANDS (142)	**11**	**5**	**6**
Squamous Cell Carcinoma	2	1	1
Carcinoma, NOS	2	1	1
Mixed Tumor, Malignant	2	2	0
Adenocarcinoma	1	0	1
Acinar Cell Carcinoma	1	0	1
Adenoid Cystic Carcinoma	1	0	1
Neoplasm, Malignant	1	1	0
Pleomorphic Adenoma	1	0	1
GUM (143)	**16**	**8**	**8**
Squamous Cell Carcinoma			
FLOOR OF MOUTH (144)	**2**	**2**	**0**
Squamous Cell Carcinoma			
OTHER PARTS OF MOUTH (145)	**15**	**9**	**6**
Squamous Cell Carcinoma	13	8	5
Adenoid Cystic Carcinoma	1	1	0
Mucoepidermoid Carcinoma	1	0	1
OROPHARYNX (146)	**8**	**5**	**3**
Squamous Cell Carcinoma	3	1	2
NHL, Large Cell	3	2	1
Hodgkin's Disease	1	1	0
Carcinoma In Situ	1	1	0
NASOPHARYNX (147)	**62**	**46**	**16**
Squamous Cell Carcinoma	51	37	14
Undifferentiated Carcinoma	6	4	2
Carcinoma, NOS	4	4	0
NHL, Small Cell	1	1	0
HYPOPHARYNX (148)	**16**	**7**	**9**
Squamous Cell Carcinoma			
OTHER SITES, PHARYNX (149)	**1**	**1**	**0**
Undifferentiated Carcinoma			
ESOPHAGUS (150)	**67**	**36**	**31**
Squamous Cell Carcinoma	58	30	28
Adenocarcinoma, NOS	5	3	2
Carcinoma, NOS	3	2	1
Carcinoma In Situ	1	1	0

Primary Site Table con't

SITE (1CD-0 CODE) HISTOLOGY	TOTAL CASES	MALES	FEMALES
STOMACH (151)	**56**	**39**	**17**
Adenocarcinoma	36	28	8
Signet Ring Cell Carcinoma	5	1	4
NHL, Large Cell	5	2	3
Carcinoma, NOS	3	2	1
Squamous Cell Carcinoma	2	2	0
Mucinous Adenocarcinoma	2	2	0
Mucin-Producing Adenocarcinoma	1	0	1
Linitis Plastica	1	1	0
Leiomyosarcoma	1	1	0
SMALL INTESTINE (152)	**6**	**2**	**4**
Adenocarcinoma	4	2	2
Malignant Carcinoid Tumor	1	0	1
Malignant Tumor, Fusiform Cell Type	1	0	1
COLON (153)	**34**	**23**	**11**
Adenocarcinoma	18	14	4
Mucinous Adenocarcinoma	4	2	2
Mucin-Producing Adenocarcinoma	4	2	2
Signet Ring Cell Carcinoma	2	1	1
Tubulovillous Adenoma	2	2	0
Squamous Cell Carcinoma	1	0	1
NHL, Immunoblastic	1	0	1
Adenomatous Polyposis	1	1	0
Carcinoma In Situ	1	1	0
RECTUM/RECTOSIGMOID JUNCTION/ANUS (154)	**30**	**19**	**11**
Adenocarcinoma	19	12	7
Mucinous Adenocarcinoma	3	1	2
Squamous Cell Carcinoma	3	2	1
Carcinoma, NOS	2	2	0
Basaloid Carcinoma	1	1	0
Neuroendocrine Carcinoma	1	0	1
Papillary Adenocarcinoma	1	1	0
LIVER (155)	**68**	**54**	**14**
Hepatocellular Carcinoma	64	51	13
Cholangiocarcinoma	2	1	1
Hepatoblastoma	1	1	0
Carcinoma, NOS	1	1	0
GALLBLADDER/BILE DUCTS (156)	**7**	**3**	**4**
Adenocarcinoma	4	2	2
Mucin-Producing Adenocarcinoma	1	0	1
Signet Ring Cell Carcinoma	1	1	0
Carcinoma, NOS	1	0	1
PANCREAS (157)	**28**	**18**	**10**
Adenocarcinoma	16	10	6
Carcinoma, NOS	6	5	1
Mucinous Cystadenocarcinoma	2	1	1
Islet Cell Carcinoma	1	0	1
Neuroendocrine Carcinoma	1	0	1
Neoplasm, Malignant	1	1	0
Acinar Cell Tumor	1	1	0

Primary Site Table con't

SITE (ICD-O CODE) HISTOLOGY	TOTAL CASES	MALES	FEMALES
OTHER G.I. SITES (159)	**7**	**6**	**1**
Adenocarcinoma	3	3	0
Mucinous Adenocarcinoma	2	2	0
Squamous Cell Carcinoma	1	0	1
Signet Ring Cell Carcinoma	1	1	0
NASAL CAVITY (160)	**8**	**5**	**3**
Squamous Cell Carcinoma	5	3	2
Adenoid Cystic Carcinoma	1	0	1
Mucinous Cystadenocarcinoma	1	1	0
NHL, Large Cell	1	1	0
LARYNX (161)	**21**	**18**	**3**
Squamous Cell Carcinoma			
BRONCHUS/LUNG (162)	**89**	**72**	**17**
Adenocarcinoma	30	17	13
Squamous Cell Carcinoma	28	28	0
Small Cell Carcinoma	16	14	2
Large Cell Carcinoma	4	3	1
Carcinoma, NOS	4	4	0
Papillary Carcinoma	1	1	0
Giant Cell Carcinoma	1	1	0
Adenosquamous Carcinoma	1	0	1
Papillary Adenocarcinoma	1	1	0
Bronchiolo-Alveolar Adenocarcinoma	1	1	0
Malignant Carcinoid Tumor	1	1	0
NHL, Mixed Small & Large Cell	1	1	0
PLEURA (163)	**2**	**2**	**0**
Mesothelioma			
HEART (164.1)	**1**	**1**	**0**
Myxoma			
MULTIPLE MYELOMA (169)	**30**	**19**	**11**
Plasma Cell Myeloma	26	17	9
Plasmacytoma	4	2	2
BONE MARROW (169)	**165**	**106**	**59**
Acute Lymphoid Leukemia	66	43	23
Acute Myeloid Leukemia	28	18	10
Chronic Myeloid Leukemia	24	14	10
Acute Myelomonocytic Leukemia	12	6	6
Chronic Lymphoid Leukemia	9	7	2
Acute Promyelocytic Leukemia	4	3	1
Aplastic Anemia	4	2	2
Polycythemia Vera	4	2	2
Acute Monocytic Leukemia	3	3	0
Myelodysplastic Syndrome	3	3	0
Acute Leukemia, NOS	1	0	1
Erythroleukemia	1	1	0
Acute Myelofibrosis	1	0	1
Hairy Cell Leukemia	1	1	0
Malignant Thrombocythemia	1	1	0
Chronic Myeloproliferative Disease	1	0	1
Chronic Lymphoproliferative Disease	1	1	0
Myelosclerosis with Myeloid Metaplasia	1	1	0

Primary Site Table con't

SITE (ICD-O CODE) HISTOLOGY	TOTAL CASES	MALES	FEMALES
BONE & CARTILAGL (170)	**53**	**33**	**20**
Osteosarcoma	22	13	9
Ewing's Sarcoma	15	11	4
Chondrosarcoma	4	2	2
Giant Cell Tumor	3	1	2
Ameloblastoma	2	0	2
NHL, Large Cell	2	2	0
Osteoblastoma	1	1	0
NHL, Immunoblastic	1	1	0
Chondroblastoma	1	0	1
Ossifying Fibroma	1	1	0
Ameloblastic Fibroma	1	1	0
CONNECTIVE & SOFT TISSUE (171)	**116**	**59**	**57**
Hemangioma	24	9	15
Neurofibromatosis	13	7	6
Neurilemmoma	10	5	5
Fibrous Histiocytoma	8	4	4
Neuroblastoma	9	6	3
Embryonal Sarcoma	7	5	2
Rhabdomyosarcoma	5	2	3
Fibrosarcoma	4	2	2
Aggressive Fibromatosis	4	2	2
Synovial Sarcoma	4	2	2
Peripheral Neuroectodermal Tumor	4	1	3
Angiofibroma	3	3	0
Liposarcoma	3	2	1
Spindle Cell Sarcoma	2	0	2
Hemangioblastoma	2	2	0
Leiomyosarcoma	2	0	2
Small Cell Sarcoma	2	1	1
Epithelioid Cell Sarcoma	1	1	0
Alveolar Soft Part Sarcoma	1	1	0
Paraganglioma	1	1	0
Clear Cell Sarcoma of Tendon	1	1	0
Hemangiosarcoma	1	0	1
Ganglioneuroblastoma	1	0	1
Giant Cell Sarcoma	1	0	1
Osteosarcoma	1	1	0
Sarcoma, NOS	1	0	1
Malignant Tumor, Fusiform Cell Type	1	1	0
SKIN (MELANOMA) (172)	**6**	**3**	**3**
Malignant Melanoma			
SKIN (NON-MELANOMA) (173)	**52**	**31**	**21**
Squamous Cell Carcinoma	25	16	9
Basal Cell Carcinoma	16	9	7
Kaposi's Sarcoma	5	2	3
Basosquamous Carcinoma	3	1	2
Mucoepidermoid Carcinoma	1	1	0
Sebaceous Adenocarcinoma	1	1	0
Verrucous Carcinoma	1	1	0

Primary Site Table con't

SITE (ICD-O CODE) HISTOLOGY	TOTAL CASES	MALES	FEMALES
BREAST (FEMALE) (174)	**135**	**0**	**135**
Infiltrating Duct Carcinoma	104	0	104
Lobular Carcinoma	6	0	6
Medullary Carcinoma	5	0	5
Carcinoma, NOS	5	0	5
Infilt. Duct Carcinoma w/ Paget's Disease	4	0	4
Tubular Adenocarcinoma	2	0	2
Intraductal Carcinoma, Non-Infiltrating	2	0	2
Adenocarcinoma	2	0	2
Squamous Cell Carcinoma	1	0	1
Cribriform Carcinoma	1	0	1
Mucinous Adenocarcinoma	1	0	1
NHL, Large Cell	1	0	1
Cystosarcoma Phyllodes	1	0	1
BREAST, MALE (175)	**2**	**2**	**0**
Infiltrating Duct Carcinoma	1	1	0
Adenocarcinoma	1	1	0
UTERUS (179.9)	**1**	**0**	**1**
Endometrial Stromal Sarcoma			
CERVIX UTERI (180)	**32**	**0**	**32**
Squamous Cell Carcinoma	24	0	24
Adenocarcinoma	4	0	4
Carcinoma In Situ	2	0	2
Small Cell Carcinoma	1	0	1
Papillary Adenocarcinoma	1	0	1
PLACENTA (181)	**17**	**0**	**17**
Choriocarcinoma	10	0	10
Invasive Hydatidiform Mole	4	0	4
Hydatidiform Mole	2	0	2
Trophoblastic Tumor	1	0	1
CORPUS UTERI (182)	**20**	**0**	**20**
Adenocarcinoma	14	0	14
Papillary Adenocarcinoma	3	0	3
Clear Cell Carcinoma	1	0	1
Endometrial Stromal Sarcoma	1	0	1
Carcinoma, NOS	1	0	1
OVARY (183)	**54**	**0**	**54**
Adenocarcinoma	13	0	13
Papillary Serous Cystadenocarcinoma	9	0	9
Papillary Adenocarcinoma	7	0	7
Serous Cystadenocarcinoma	5	0	5
Mucinous Cystadenocarcinoma	4	0	4
Malignant Teratoma	4	0	4
Dysgerminoma	2	0	2
Carcinoma, NOS	2	0	2
Cystadenocarcinoma, NOS	1	0	1
Papillary Cystadenocarcinoma	1	0	1
Papillary Mucinous Cystadenocarcinoma	1	0	1
Sex Cord-Stromal Tumor	1	0	1
Juvenile Granulosa Cell Tumor	1	0	1
Mesodermal Mixed Tumor	1	0	1
Endodermal Sinus Tumor	1	0	1
Mixed Germ Cell Tumor	1	0	1

Primary Site Table con't

SITE (ICD-O CODE) HISTOLOGY	TOTAL CASES	MALES	FEMALES
FEMALE GENITAL ORGANS (184)	**2**	**0**	**2**
Squamous Cell Carcinoma			
PROSTATE (185)	**27**	**27**	**0**
Adenocarcinoma	21	21	0
Carcinoma, NOS	6	6	0
TESTIS (186)	**9**	**9**	**0**
Mixed Germ Cell Tumor	4	4	0
Seminoma	3	3	0
Embryonal Carcinoma	1	1	0
Endodermal Sinus Tumor	1	1	0
MALE GENITAL ORGANS (187)	**4**	**4**	**0**
Squamous Cell Carcinoma	3	3	0
Sweat Gland Adenocarcinoma	1	1	0
URINARY BLADDER (188)	**72**	**58**	**14**
Transitional Cell Carcinoma	29	24	5
Papillary Transitional Carcinoma	26	21	5
Squamous Cell Carcinoma	14	10	4
Carcinoma, NOS	1	1	0
Adenocarcinoma	1	1	0
Signet Ring Cell Carcinoma	1	1	0
KIDNEY (189)	**34**	**23**	**11**
Renal Cell Carcinoma	20	12	8
Nephroblastoma	6	4	2
Transitional Cell Carcinoma	2	2	0
Clear Cell Sarcoma	2	1	1
Adenocarcinoma	1	1	0
Malignant Neoplasm	1	1	0
Carcinoma In Situ	1	1	0
Oxyphilic Adenoma	1	1	0
EYE (190)	**24**	**15**	**9**
Retinoblastoma	15	8	7
Squamous Cell Carcinoma	5	3	2
Spindle Cell Melanoma	2	2	0
Mucoepidermoid Carcinoma	1	1	0
Olfactory Neurogenic Tumor	1	1	0
BRAIN (191)	**95**	**59**	**36**
Astrocytoma	30	20	10
Glioblastoma	23	13	10
Medulloblastoma	19	13	6
Primitive Neuroectodermal Tumor	5	5	0
Malignant Glioma	4	4	0
Mixed Glioma	3	1	2
Choroid Plexus Papilloma	3	1	2
Oligodendroglioma	2	0	2
Pleomorphic Xanthoastrocytoma	1	1	0
NHL, Small Cell	1	1	0
NHL, Large Cell	1	0	1
Ependymoma	1	0	1
Subependymal Giant Cell Astrocytoma	1	0	1
Malignant Tumor Cell	1	0	1

Primary Site Table con't

SITE (ICD-O CODE) HISTOLOGY	TOTAL CASES	MALES	FEMALES
OTHER NERVOUS SYSTEM (192)	**42**	**14**	**28**
Meningioma	35	9	26
Astrocytoma	3	1	2
Myxopapillary Ependymoma	2	2	0
Ependymoma	1	1	0
Malignant Glioma	1	1	0
THYROID (193)	**115**	**22**	**93**
Papillary Carcinoma	88	15	73
Papillary & Follicular Adenoma	14	2	12
Follicular Adenoma	2	1	1
Follicular Adenocarcinoma	2	1	1
Medullary Carcinoma	2	1	1
Carcinoma, NOS	1	1	0
Papillary Adenocarcinoma	1	1	0
Oxyphilic Adenocarcinoma	1	0	1
NHL, Small Cell	1	0	1
NHL, Large Cell	1	0	1
Adenoma, NOS	1	0	1
Microfollicular Adenoma	1	0	1
OTHER ENDOCRINE GLANDS (194)	**36**	**18**	**18**
Adenoma, NOS	16	5	11
Craniopharyngioma	5	4	1
Glomus Jugulare Tumor	4	2	2
Chromophobe Adenoma	3	3	0
Neuroblastoma	2	2	0
Carotid Body Tumor	2	0	2
Neoplasm, Borderline	2	1	1
Pheochromocytoma	1	0	1
Acidophil Adenoma	1	1	0
ILL-DEFINED SITES (195)	**2**	**1**	**1**
Teratoma	1	0	1
Endodermal Sinus Tumor	1	1	0
LYMPH NODES, NON-HODGKIN'S LYMPHOMA (196) (Excluding Extra-Nodal Lymphomas)	**146**	**95**	**51**
Large Cell Lymphoma	80	49	31
Small Cell lymphoma	21	12	9
Lymphoblastic Lymphoma	12	11	1
Malignant Lymphoma, NOS	11	8	3
Immunoblastic Lymphoma	8	4	4
Small Cleaved Cell Lymphoma	7	5	2
Burkitt's Lymphoma	4	4	0
Nodular Lymphoma	1	0	1
True Histiocytic Lymphoma	1	1	0
Mycosis Fungoides	1	1	0
LYMPH NODES, HODGKIN'S DISEASE (196)	**73**	**53**	**20**
Nodular Sclerosis	40	26	14
Mixed Cellularity	22	20	2
Hodgkin's Disease, NOS	5	3	2
Lymphocytic Depletion	3	3	0
Lymphocytic Predominance	3	1	2

Primary Site Table con't

SITE (ICD-O CODE) HISTOLOGY	TOTAL CASES	MALES	FEMALES
HISTIOCYTOSES (196)	**10**	**7**	**3**
Histiocytosis X	7	5	2
Malignant Histiocytosis	3	2	1
PRIMARY UNKNOWN (199)	**45**	**28**	**17**
Adenocarcinoma	23	13	10
Squamous Cell Carcinoma	6	5	1
Carcinoma, NOS	4	3	1
Malignant Neoplasm	4	4	0
Large Cell Carcinoma	3	2	1
Small Cell Carcinoma	1	1	0
Neuroendocrine Carcinoma	1	0	1
Malignant Tumor, Fusiform Cell	1	0	1
Papillary Adenocarcinoma	1	0	1
Mucoepidermoid Carcinoma	1	0	1

TABLE 9

PATIENTS WITH MULTIPLE PRIMARIES
1989

PRIMARY SITE 1989	HISTOLOGY	OTHER PRIMARIES (PREVIOUS OR CONCURRENT)	TOTAL NO.	MALES	FEMALES
ALL MULTIPLE PRIMARIES			**37**	**21**	**16**
ORAL CAVITY			**3**	**1**	**2**
	Squamous Cell Ca-Lip	Lung	1	1	0
	Squamous Cell Ca-Tongue*	Parotid	1	0	1
		Eyelid			
	NHL - Tonsil	Small Intestine	1	0	1
ESOPHAGUS			**3**	**3**	**0**
	Squamous Cell Carcinoma	Hypopharynx	1	1	0
	Squamous Cell Carcinoma	Stomach - Adenocarcinoma	1	1	0
	Carcinoma In Situ	Hypopharynx	1	1	0
COLON			**1**	**1**	**0**
	Carcinoma In Situ	Hodgkin's Disease			
LIVER			**2**	**2**	**0**
	Hepatocellular Carcinoma	Skin, Nose	1	1	0
	Hepatocellular Carcinoma	Conjunctiva	1	1	0
PANCREAS			**2**	**1**	**1**
	Adenocarcinoma	NHL	1	1	0
	Islet Cell Carcinoma	Primary Unknown	1	0	1
LARYNX			**2**	**2**	**0**
	Squamous Cell Carcinoma	Colon	1	1	0
	Squamous Cell Carcinoma	Acute Myeloid Leukemia	1	1	0
LUNG			**1**	**0**	**1**
	Adenocarcinoma	Skin, Cheek			
BONE MARROW			**2**	**1**	**1**
	Plasma Cell Myeloma	Hodgkin's Disease-Tonsil	1	1	0
	Chronic Myeloid Leukemia	Nasopharynx	1	0	1
SKIN			**4**	**3**	**1**
	Basal Cell - Lt Eyelid	Skin, Rt Orbit	1	0	1
	Basal Cell - Face	Rectum	1	1	0
	Basal Cell - Nose	Chr. Lymphocytic Leukemia	1	1	0
	Basal Cell - Nose	Skin - Chest Wall	1	1	0
BREAST			**4**	**0**	**4**
	Duct Cell Carcinoma	Contra. Breast	1	0	1
	Duct Cell Carcinoma	Contra. Breast	1	0	1
	Duct Cell Carcinoma	Contra. Breast	1	0	1
	Adenocarcinoma	Skin, Axilla	1	0	1
CERVIX			**1**	**0**	**1**
	Carcinoma In Situ	Kidney			
OVARY			**1**	**0**	**1**
	Malig. Serous Cystadenoma	Contra. Ovary			

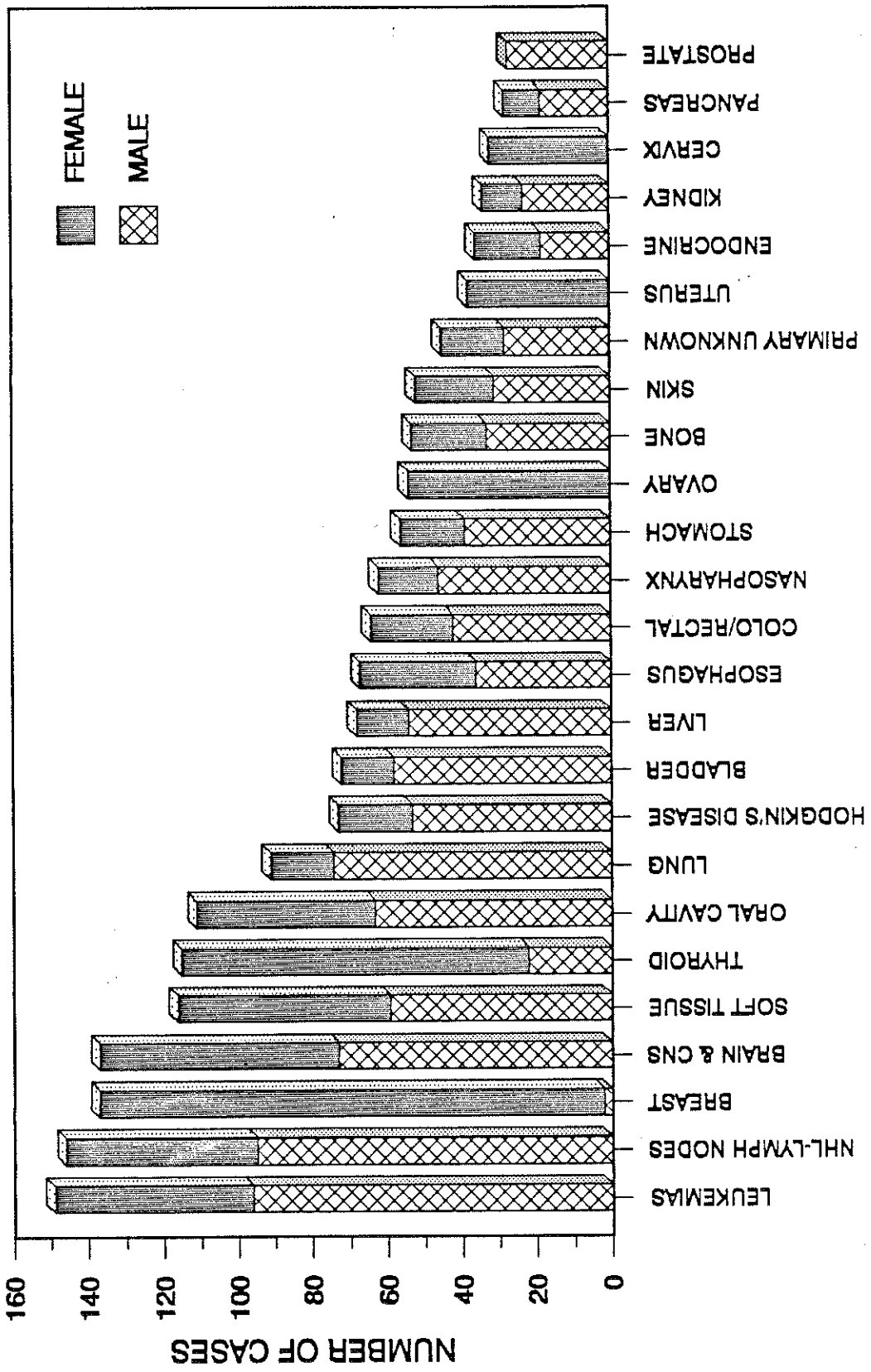
Multiple Primaries con't

PRIMARY SITE HISTOLOGY	OTHER PRIMARIES (PREVIOUS OR CONCURRENT)	TOTAL NO.	MALES	FEMALES
PROSTATE		**3**	**3**	**0**
Carcinoma	NHL - Femur	1	1	0
Adenocarcinoma	Kaposi's Sarcoma	1	1	0
Adenocarcinoma	Colon	1	1	0
URETHRA		**1**	**1**	**0**
Carcinoma In Situ	Bladder			
BRAIN & CNS		**1**	**1**	**0**
Meningioma, Cerebral	Glioblastoma Multiforme			
THYROID		**3**	**0**	**3**
Papillary Carcinoma	Ac. Myelomonocytic Leuk.	1	0	1
Papillary Carcinoma	Nasopharynx	1	0	1
Papillary Carcinoma	Hurtle Cell Carcinoma	1	0	1
LYMPH NODES		**1**	**1**	**0**
NHL, Diffuse Large Cell	Thyroid			
PRIMARY UNKNOWN		**2**	**1**	**1**
Squamous Cell Carcinoma	Ca In Situ - Oropharynx	1	1	0
Adenocarcinoma	Breast - Carcinoma	1	0	1

*** Patient has three primary malignancies.**

FIGURE 19

DISTRIBUTION OF 25 MOST COMMON MALIGNANCIES
1989 (TOTAL CASES = 2,016)



DISTRIBUTION OF 10 MOST COMMON MALIGNANCIES BY SEX 1989

FIGURE 20

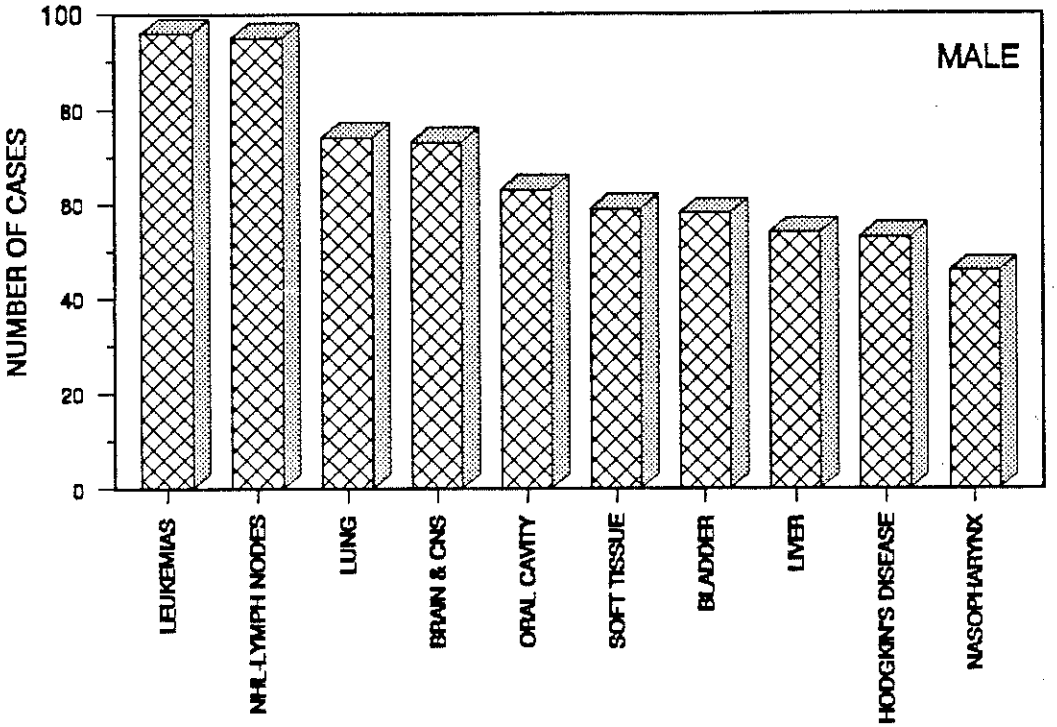


FIGURE 21

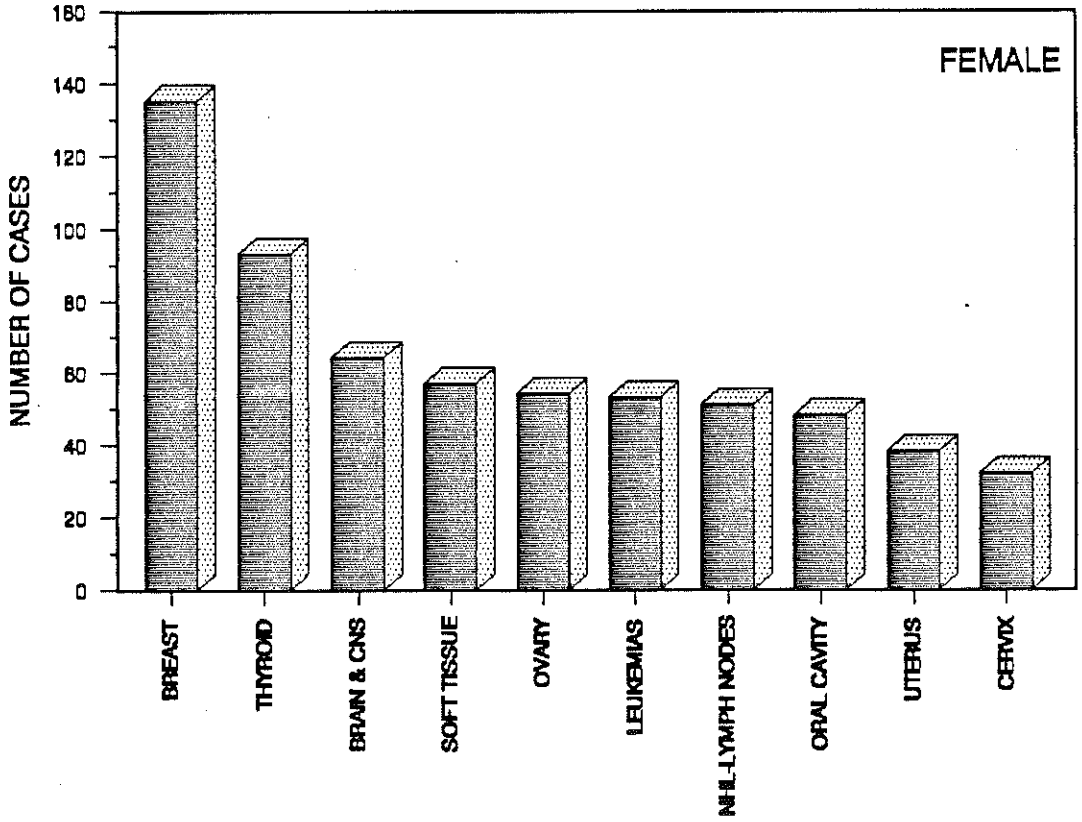


TABLE 10

TOTAL CASES REFERRED TO KFSH BY AGE AND SITE*
FOR THE YEAR 1989

ICD-O	DESCRIPTION	0-4	5-9	10-14	15-19	20-24	25-29	30-34	35-39	40-44	45-49	50-54	55-59	60-64	65-69	70-74	75-79	80-84	85+	Total
140-146,148-149	Oral Cavity	0	0	1	2	1	4	0	2	9	12	14	13	16	9	13	6	5	4	111
147	Nasopharynx	0	0	4	5	5	3	4	6	4	4	7	6	6	2	4	2	0	0	62
150	Esophagus	0	0	0	0	0	1	0	1	4	7	8	3	14	6	10	4	7	2	67
151	Stomach	0	0	0	0	0	0	1	5	3	6	3	9	4	2	11	7	5	0	56
153-154	Colon, Rectum	0	0	0	0	3	4	7	5	2	7	8	5	9	5	6	2	1	0	64
155	Liver	1	0	1	0	0	1	1	1	2	3	9	11	11	12	6	5	3	1	68
157	Pancreas	0	0	0	0	0	1	0	2	1	0	4	3	8	4	3	0	1	1	28
152,156,158-159	Other GI	0	0	0	0	0	1	2	1	5	0	1	2	3	1	2	1	1	0	20
161	Larynx	0	0	0	0	0	0	0	2	2	3	3	3	3	4	1	0	0	0	21
162-163	Lung	0	0	0	0	0	0	0	1	5	7	11	16	19	16	9	5	1	1	91
169(973)	Multiple Myeloma	0	0	0	0	0	0	1	1	4	1	7	1	2	8	4	1	0	0	30
169(982)	Lymphoid Leukemia	21	14	9	8	5	2	1	0	2	2	1	3	4	1	1	1	0	0	75
169(986)	Myeloid Leukemia	9	3	6	7	4	7	6	4	6	1	6	2	4	1	0	2	0	0	68
169(980-1,983-5,987-94)	Other Leukemias	1	3	0	0	0	0	0	0	1	0	0	0	0	1	0	0	0	0	6
170	Bone, Cartilage	3	6	12	5	8	5	4	3	1	1	1	1	0	1	1	0	0	1	53
171	Soft Tissue Sarcoma	26	9	8	7	9	9	5	8	8	2	3	7	5	3	4	3	0	0	116
172	Skin Melanoma	0	0	0	0	0	0	0	0	1	0	2	1	1	0	0	0	1	0	6
173	Other Skin Cancer	0	0	1	1	2	2	1	2	2	2	7	5	3	5	10	1	3	5	52
174-175	Breast	0	0	0	0	4	6	20	18	25	18	20	8	4	5	5	1	3	0	137
179,181-182,184	Uterus, Genital	0	0	0	2	4	6	1	1	3	2	5	4	5	4	1	0	2	0	40
180	Cervix	0	0	0	0	0	1	0	7	1	1	7	3	7	3	1	1	0	0	32
183	Ovary	0	0	2	1	2	4	2	3	0	6	5	9	6	8	4	1	1	0	54
185	Prostate	0	0	0	0	0	0	0	0	0	1	2	1	4	9	1	4	2	3	27
186,187	Testis, Genital	0	0	0	0	2	1	4	1	0	1	0	0	3	0	0	1	0	0	13
188	Bladder	0	0	0	0	0	3	2	5	5	5	6	7	9	5	9	8	5	3	72
189	Kidney, Urinary	7	1	0	0	0	1	0	2	1	3	3	4	0	5	3	2	2	0	34
190	Eye	14	1	2	0	0	0	1	0	0	0	0	0	1	0	2	2	1	0	24
191-192	Brain, CNS	17	18	10	12	5	3	13	7	8	9	13	6	6	5	4	1	0	0	137
193	Thyroid	1	0	1	5	16	14	10	8	9	12	10	3	9	6	6	4	1	0	115
194	Other Endocrine	2	0	4	3	4	4	4	4	4	0	4	2	1	0	0	0	0	0	36
196(959,967-970)	NHL - Lymph Nodes	11	6	5	8	9	3	12	5	13	7	9	13	12	14	6	8	3	2	146
196(965,966)	Hodgkin's Disease	1	7	11	11	8	4	7	5	3	3	3	1	3	1	1	2	2	0	73
196(972)	Histiocytoses	6	0	1	1	0	2	0	0	0	0	0	0	0	0	0	0	0	0	10
199	Primary Unknown	0	1	0	0	1	2	1	2	0	3	6	7	10	5	3	1	2	1	45
All Others	******	5	1	1	1	1	1	0	1	0	1	3	2	2	2	3	1	2	0	27
TOTALS		125	70	79	79	93	95	110	113	134	130	191	161	194	153	134	77	54	24	2,016

* Includes Benign Cases that are Reportable by Agreement of Tumor Committee and Multiple Primary Neoplasms.

TABLE 11

MALE CASES REFERRED TO KFSH BY AGE AND SITE*
FOR THE YEAR 1989

ICD-O	DESCRIPTION	0-4	5-9	10-14	15-19	20-24	25-29	30-34	35-39	40-44	45-49	50-54	55-59	60-64	65-69	70-74	75-79	80-84	85+	Total
140-146,148-149	Oral Cavity	0	0	1	0	1	2	0	1	4	3	7	9	8	6	10	4	4	3	63
147	Nasopharynx	0	0	3	2	3	3	3	5	4	3	6	4	5	2	3	0	0	0	46
150	Esophagus	0	0	0	0	0	0	0	1	0	2	4	2	6	3	8	3	5	2	36
151	Stomach	0	0	0	0	0	0	0	2	1	4	2	7	1	2	8	7	5	0	39
153-154	Colon, Rectum	0	0	0	0	1	3	3	4	1	6	4	2	7	3	6	1	1	0	42
155	Liver	1	0	0	0	0	0	1	0	2	3	5	11	9	11	3	5	3	0	54
157	Pancreas	0	0	0	0	0	0	0	1	1	0	4	2	4	3	2	0	0	1	18
152,156,158-159	Other GI	0	0	0	0	0	1	0	1	2	0	1	1	1	1	2	1	0	0	11
161	Larynx	0	0	0	0	0	0	0	0	2	3	3	3	3	3	1	0	0	0	18
162-163	Lung	0	0	0	0	0	0	0	1	4	6	7	13	16	15	6	4	1	1	74
169(973)	Multiple Myeloma	0	0	0	0	0	0	1	1	2	0	3	1	1	6	4	0	0	0	19
169(982)	Lymphoid Leukemia	15	10	6	5	4	1	1	0	0	0	0	3	2	1	1	1	0	0	50
169(986)	Myeloid Leukemia	5	2	3	5	3	5	2	3	3	0	3	2	3	1	0	1	0	0	41
169(980-1,983-5,987-94)	Other Leukemias	1	2	0	0	0	0	0	0	1	0	0	0	0	1	0	0	0	0	5
170	Bone, Cartilage	3	5	5	4	6	3	1	1	1	0	1	1	0	1	0	0	0	1	33
171	Soft Tissue Sarcoma	10	5	6	4	5	5	3	4	4	0	3	1	1	2	3	3	0	0	59
172	Skin Melanoma	0	0	0	0	0	0	0	0	1	0	0	0	1	0	0	0	1	0	3
173	Other Skin Cancer	0	0	1	0	1	1	0	2	1	2	2	3	2	3	7	0	2	4	31
174-175	Breast	0	0	0	0	0	0	0	0	0	0	0	1	0	1	0	0	0	0	2
179,181-182,184	Uterus, Genital	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
180	Cervix	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
183	Ovary	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
185	Prostate	0	0	0	0	0	0	0	0	0	1	2	1	4	9	1	4	2	3	27
186,187	Testis, Genital	0	0	0	0	2	1	4	1	0	1	0	0	3	0	0	1	0	0	13
188	Bladder	0	0	0	0	0	1	2	2	4	5	4	4	8	4	9	8	5	2	58
189	Kidney, Urinary	4	1	0	0	0	0	0	0	0	1	3	3	0	5	3	2	1	0	23
190	Eye	9	0	1	0	0	0	1	0	0	0	0	0	1	0	1	1	1	0	15
191-192	Brain, CNS	7	10	7	9	4	1	9	1	3	2	7	4	4	2	3	0	0	0	73
193	Thyroid	0	0	0	0	4	2	2	0	3	4	1	0	2	1	2	1	0	0	22
194	Other Endocrine	2	0	3	1	2	1	2	2	2	0	2	1	0	0	0	0	0	0	18
196(959,967-970)	NHL - Lymph Nodes	5	3	4	5	6	2	6	4	10	4	7	8	6	11	5	5	3	1	95
196(965,966)	Hodgkin's Disease	1	5	10	7	2	4	5	5	2	3	1	1	2	1	1	1	2	0	53
196(972)	Histiocytoses	3	0	1	1	0	2	0	0	0	0	0	0	0	0	0	0	0	0	7
199	Primary Unknown	0	1	0	0	1	1	0	2	0	2	4	4	7	1	3	0	1	1	28
All Others	******	4	1	1	0	0	1	0	0	0	0	2	0	2	2	3	0	1	0	17
TOTALS		70	45	52	43	45	40	46	44	58	55	88	92	109	101	95	53	38	19	1,093

* Includes Benign Cases that are Reportable by Agreement of Tumor Committee and Multiple Primary Neoplasms.

TABLE 12

FEMALE CASES REFERRED TO KFSH BY AGE AND SITE*
FOR THE YEAR 1989

ICD-O	DESCRIPTION	0-4	5-9	10-14	15-19	20-24	25-29	30-34	35-39	40-44	45-49	50-54	55-59	60-64	65-69	70-74	75-79	80-84	85+	Total
140-146,148-149	Oral Cavity	0	0	0	2	0	2	0	1	5	9	7	4	8	3	3	2	1	1	48
147	Nasopharynx	0	0	1	3	2	0	1	1	0	1	1	2	1	0	1	2	0	0	16
150	Esophagus	0	0	0	0	0	1	0	0	4	5	4	1	8	3	2	1	2	0	31
151	Stomach	0	0	0	0	0	0	1	3	2	2	1	2	3	0	3	0	0	0	17
153-154	Colon, Rectum	0	0	0	0	2	1	4	1	1	1	4	3	2	2	0	1	0	0	22
155	Liver	0	0	1	0	0	1	0	1	0	0	4	0	2	1	3	0	0	1	14
157	Pancreas	0	0	0	0	0	1	0	1	0	0	0	1	4	1	1	0	1	0	10
152,156,158-159	Other GI	0	0	0	0	0	0	2	0	3	0	0	1	2	0	0	0	1	0	9
161	Larynx	0	0	0	0	0	0	0	2	0	0	0	0	0	1	0	0	0	0	3
162-163	Lung	0	0	0	0	0	0	0	0	1	1	4	3	3	1	3	1	0	0	17
169(973)	Multiple Myeloma	0	0	0	0	0	0	0	0	2	1	4	0	1	2	0	1	0	0	11
169(982)	Lymphoid Leukemia	6	4	3	3	1	1	0	0	2	2	1	0	2	0	0	0	0	0	25
169(986)	Myeloid Leukemia	4	1	3	2	1	2	4	1	3	1	3	0	1	0	0	1	0	0	27
169(980-1,983-5,987-94)	Other Leukemias	0	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1
170	Bone, Cartilage	0	1	7	1	2	2	3	2	0	1	0	0	0	0	1	0	0	0	20
171	Soft Tissue Sarcoma	16	4	2	3	4	4	2	4	4	2	0	6	4	1	1	0	0	0	57
172	Skin Melanoma	0	0	0	0	0	0	0	0	0	0	2	1	0	0	0	0	0	0	3
173	Other Skin Cancer	0	0	0	1	1	1	1	0	1	0	5	2	1	2	3	1	1	1	21
174-175	Breast	0	0	0	0	4	6	20	18	25	18	20	7	4	4	5	1	3	0	135
179,181-182,184	Uterus, Genital	0	0	0	2	4	6	1	1	3	2	5	4	5	4	1	0	2	0	40
180	Cervix	0	0	0	0	0	1	0	7	1	1	7	3	7	3	1	1	0	0	32
183	Ovary	0	0	2	1	2	4	2	3	0	6	5	9	6	8	4	1	1	0	54
185	Prostate	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
186,187	Testis, Genital	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
188	Bladder	0	0	0	0	0	2	0	3	1	0	2	3	1	1	0	0	0	1	14
189	Kidney, Urinary	3	0	0	0	0	1	0	2	1	2	0	1	0	0	0	0	1	0	11
190	Eye	5	1	1	0	0	0	0	0	0	0	0	0	0	0	1	1	0	0	9
191-192	Brain, CNS	10	8	3	3	1	2	4	6	5	7	6	2	2	3	1	1	0	0	64
193	Thyroid	1	0	1	5	12	12	8	8	6	8	9	3	7	5	4	3	1	0	93
194	Other Endocrine	0	0	1	2	2	3	2	2	2	0	2	1	1	0	0	0	0	0	18
196(959,967-970)	NHL - Lymph Nodes	6	3	1	3	3	1	6	1	3	3	2	5	6	3	1	3	0	1	51
196(965,966)	Hodgkin's Disease	0	2	1	4	6	0	2	0	1	0	2	0	1	0	0	1	0	0	20
196(972)	Histiocytoses	3	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	3
199	Primary Unknown	0	0	0	0	0	1	1	0	0	1	2	3	3	4	0	1	1	0	17
All Others	******	1	0	0	1	1	0	0	1	0	1	1	2	0	0	0	1	1	0	10
TOTALS		55	25	27	36	48	55	64	69	76	75	103	69	85	52	39	24	16	5	923

* Includes Benign Cases that are Reportable by Agreement of Tumor Committee and Multiple Primary Neoplasms.

STAGE OF DISEASE AT DIAGNOSIS

Stage in any malignant process may be defined as the particular step, phase, or extent in a tumor's development which predicts the ultimate outcome for the patient and his disease. The microscopic appearance, extent, and biological behavior of a tumor as well as host factors play a part in prognosis and are therefore important in staging.

The SEER (Surveillance, Epidemiology, and End Results) Summary Staging Guide was utilized for all stageable cases. This system summarizes the disease categories into three general staging groups (i.e. localized, regional, and distant). Stage categories are based on a combination of clinical observations and operative-pathological evaluation. The priority order is pathological, operative, clinical.

Summary Staging Definitions:

IN SITU: Intraepithelial, noninvasive, noninfiltrating

LOCALIZED: Within organ

a. Invasive cancer confined to the organ of origin
b. Intraluminal extension where specified

REGIONAL: Beyond the organ of origin

a. By direct extension to adjacent organs/tissues
b. To regional lymph nodes
c. Both (a) and (b)

DISTANT: Direct extension or metastasis

a. Direct continuity to organs other than above
b. Discontinuous metastasis
c. To distant lymph nodes

In addition to the SEER Summary Stage, if a physician utilizes the AJCC (TNM) Staging System or a site-specific staging system (for example FIGO, Dukes, etc.) this is also recorded in the patient record.

Please refer to Table 13 for the number of cases by major cancer site and stage at diagnosis and to Figure 22 for the graphic distribution of cases by stage at diagnosis. Figure 23 illustrates the distribution of cases by first course of treatment.

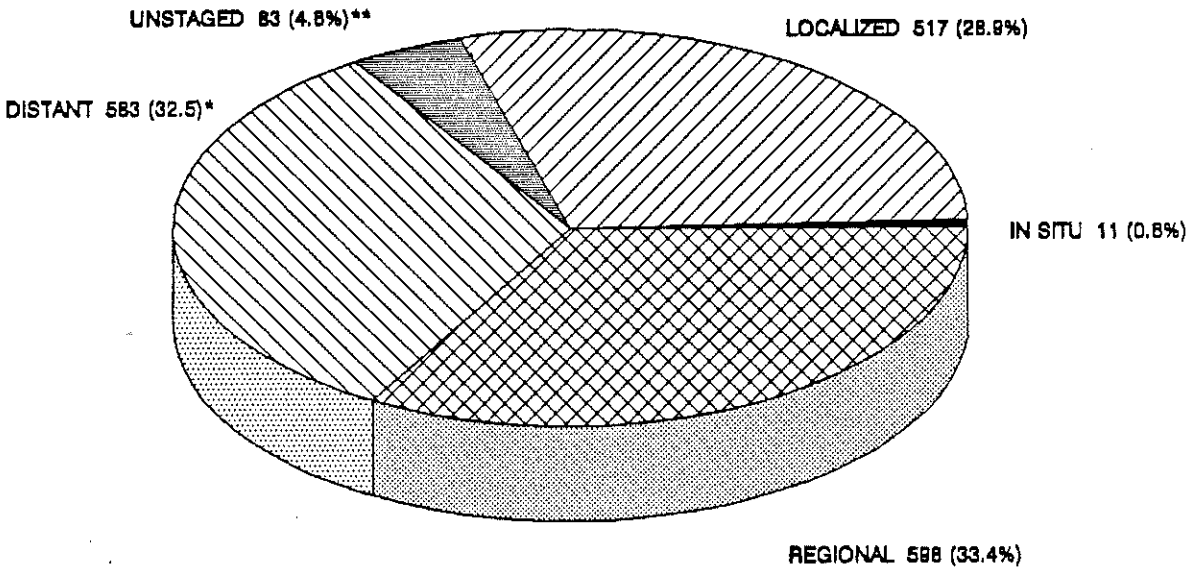
TABLE 13

STAGE AT DIAGNOSIS BY PRIMARY SITE*
SEER SUMMARY STAGE - 1989

ICD-O	DESCRIPTION	IN-SITU	LOCAL	REGIONAL				DIST	UNSTG	TOTAL
				DIRX	LN	BOTH	NOS			
140-146,148-149	Oral Cavity	1	29	28	13	15	0	17	8	111
147	Nasopharynx	0	6	1	23	5	0	24	3	62
150	Esophagus	1	19	17	7	5	0	16	2	67
151	Stomach	0	4	10	2	16	0	19	5	56
153-154	Colon, Rectum	1	11	14	3	15	2	13	5	64
155	Liver	0	15	9	3	2	0	33	6	68
157	Pancreas	0	3	9	1	0	0	15	0	28
152,156,158-159	Other GI	0	1	7	1	1	0	8	2	20
161	Larynx	0	8	4	1	4	0	3	1	21
162-163	Lung	0	5	12	17	2	0	52	3	91
169(973)	Multiple Myeloma	0	0	0	0	0	0	30	0	30
169(982)	Lymphoid Leukemia	0	0	0	0	0	0	75	0	75
169(986)	Myeloid Leukemia	0	0	0	0	0	0	68	0	68
169(980-1,983-5,987-94)	Other Leukemias	0	0	0	0	0	0	6	0	6
170	Bone, Cartilage	0	14	27	1	0	0	11	0	53
171	Soft Tissue Sarcoma	0	52	19	2	0	0	38	5	116
172	Skin Melanoma	0	3	1	0	0	0	0	2	6
173	Other Skin Cancer	0	14	8	4	4	0	15	7	52
174-175	Breast	4	36	8	47	9	0	27	6	137
179,181-182,184	Uterus, Genital	0	19	3	1	0	1	13	3	40
180	Cervix	3	5	15	0	2	0	7	0	32
183	Ovary	0	14	5	1	0	0	31	3	54
185	Prostate	0	6	4	0	0	0	15	2	27
186,187	Testis, Genital	0	3	1	3	3	0	3	0	13
188	Bladder	0	35	12	0	1	0	20	4	72
189	Kidney, Urinary	1	12	5	2	3	0	11	0	34
190	Eye	0	8	8	0	0	0	7	1	24
191-192	Brain, CNS	0	111	20	0	0	0	6	0	137
193	Thyroid	0	42	12	21	16	1	13	10	115
194	Other Endocrine	0	19	13	0	0	0	4	0	36
196(959,967-970)	NHL - Lymph Nodes	0	10	16	8	17	1	91	3	146
196(965,966)	Hodgkin's Disease	0	10	2	18	0	1	41	1	73
196(972)	Histiocytoses	0	0	0	0	0	0	10	0	10
199	Primary Unknown	0	0	0	0	0	0	0	45	45
All Others	******	0	3	2	0	1	0	20	1	27
TOTALS		11	517	292	179	121	6	762	128	2,016

* Includes Benign Cases that are Reportable by Agreement of Tumor Committee and Multiple Primary Neoplasms.

FIGURE 22
DISTRIBUTION OF 1,792 CASES BY STAGE AT DIAGNOSIS
1989

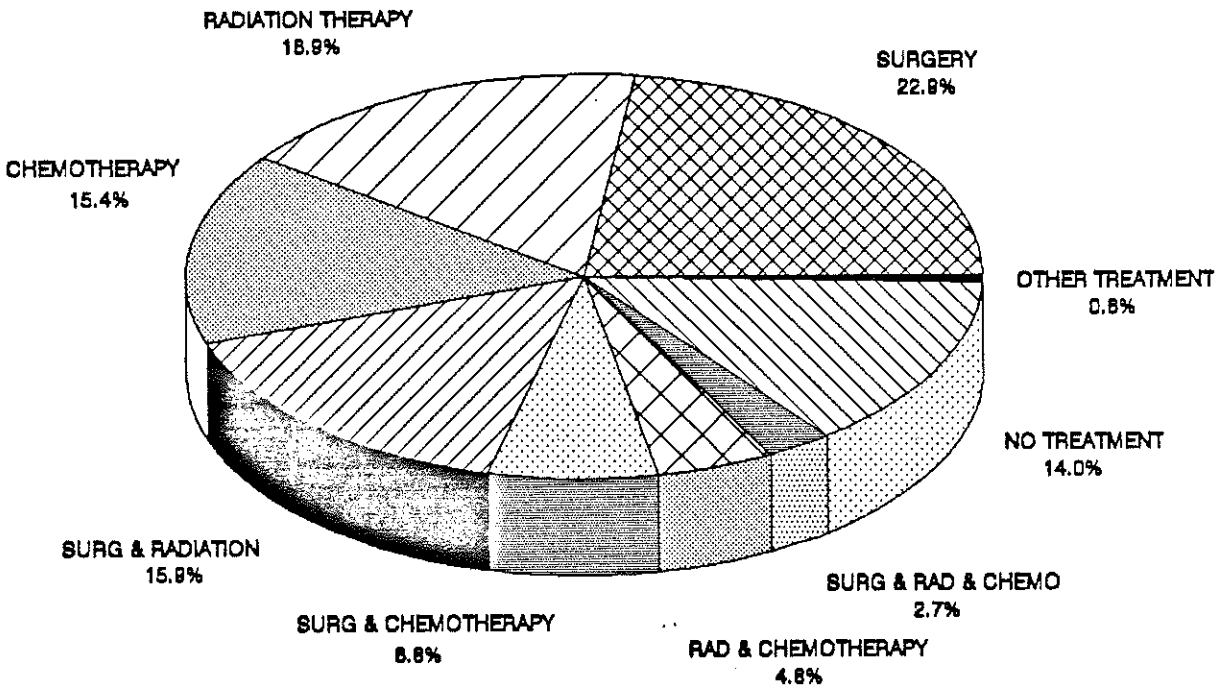


* EXCLUDES LEUKEMIAS AND
MULTIPLE MYELOMA CASES (179 CASES)

** EXCLUDES UNKNOWN PRIMARIES (45 CASES)

FIGURE 23

DISTRIBUTION OF 2,016 CASES BY FIRST COURSE OF TREATMENT* (SINGLY OR IN COMBINATIONS) 1989



* INITIAL TUMOR-DIRECTED TREATMENT WITHIN FOUR MONTHS AFTER DIAGNOSIS.

V. ADMINISTRATIVE REPORT

Total patients accessioned have shown a steady increase over the past four years. In 1985, there were 1,540 patients accessioned, 1,772 in 1986, 2,136 in 1987, and 2,139 in 1988. In 1989, however, the number slightly decreased to 1,975. Whether this is significant or not is highly dubious. If the decrease is real the explanation might be that many hospitals now have their Oncology clinics/units which take care of cancer patients. The number of children, however, did not show a significant decrease in 1989 because those hospitals do not have a specialized Pediatric Oncology service, and therefore, children are still being referred to the KFSH&RC.

Figure 24 illustrates the number of patients accessioned each year from 1975 to 1989. Figure 25 shows the yearly distribution of cases by sex and Figure 26, the yearly distribution of children vs adults.

FIGURE 24

DISTRIBUTION OF PATIENTS ACCESSIONED BY YEAR

1975 - 1989

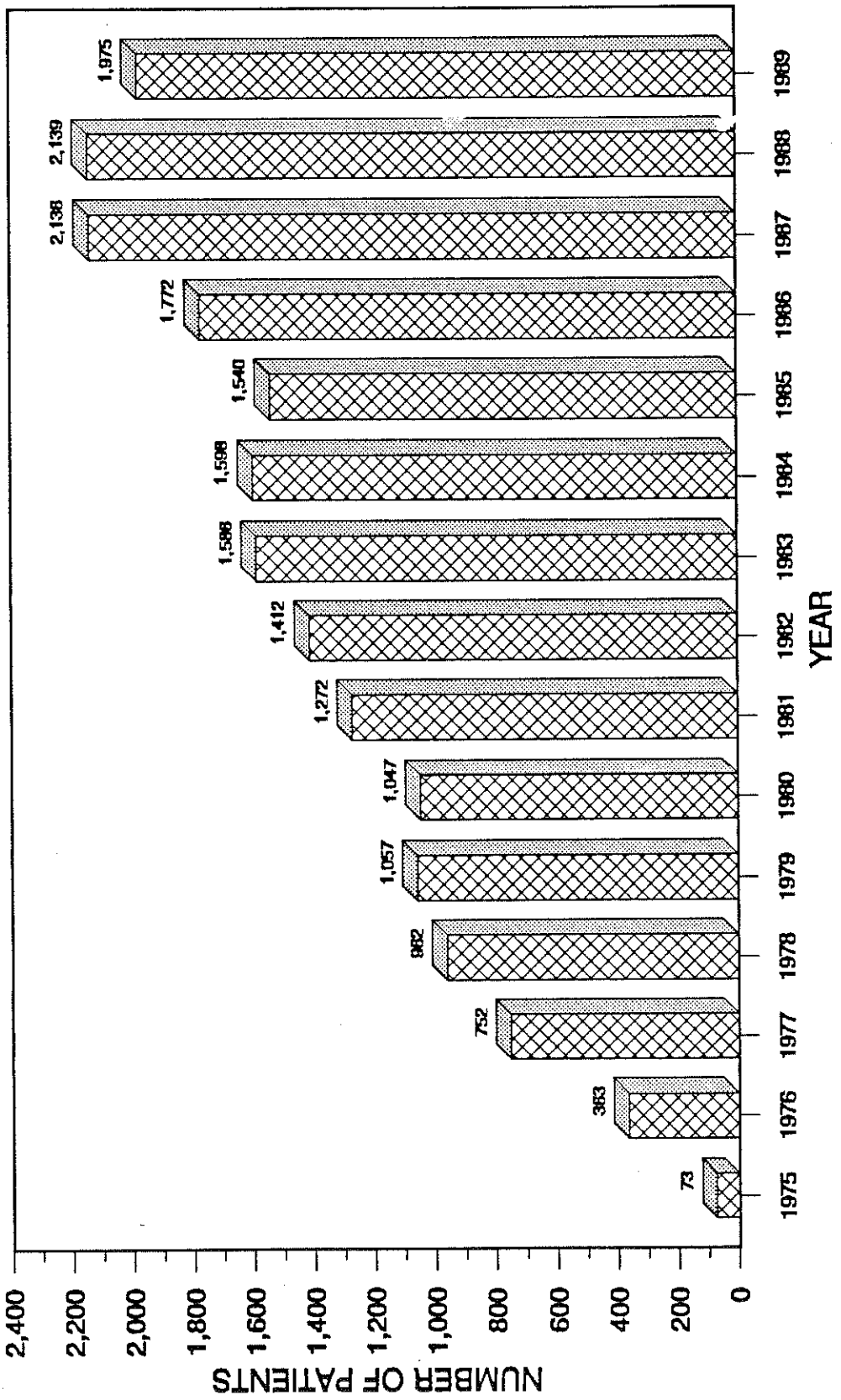


FIGURE 25

YEARLY DISTRIBUTION OF 19,885 CASES BY SEX
1975 - 1989

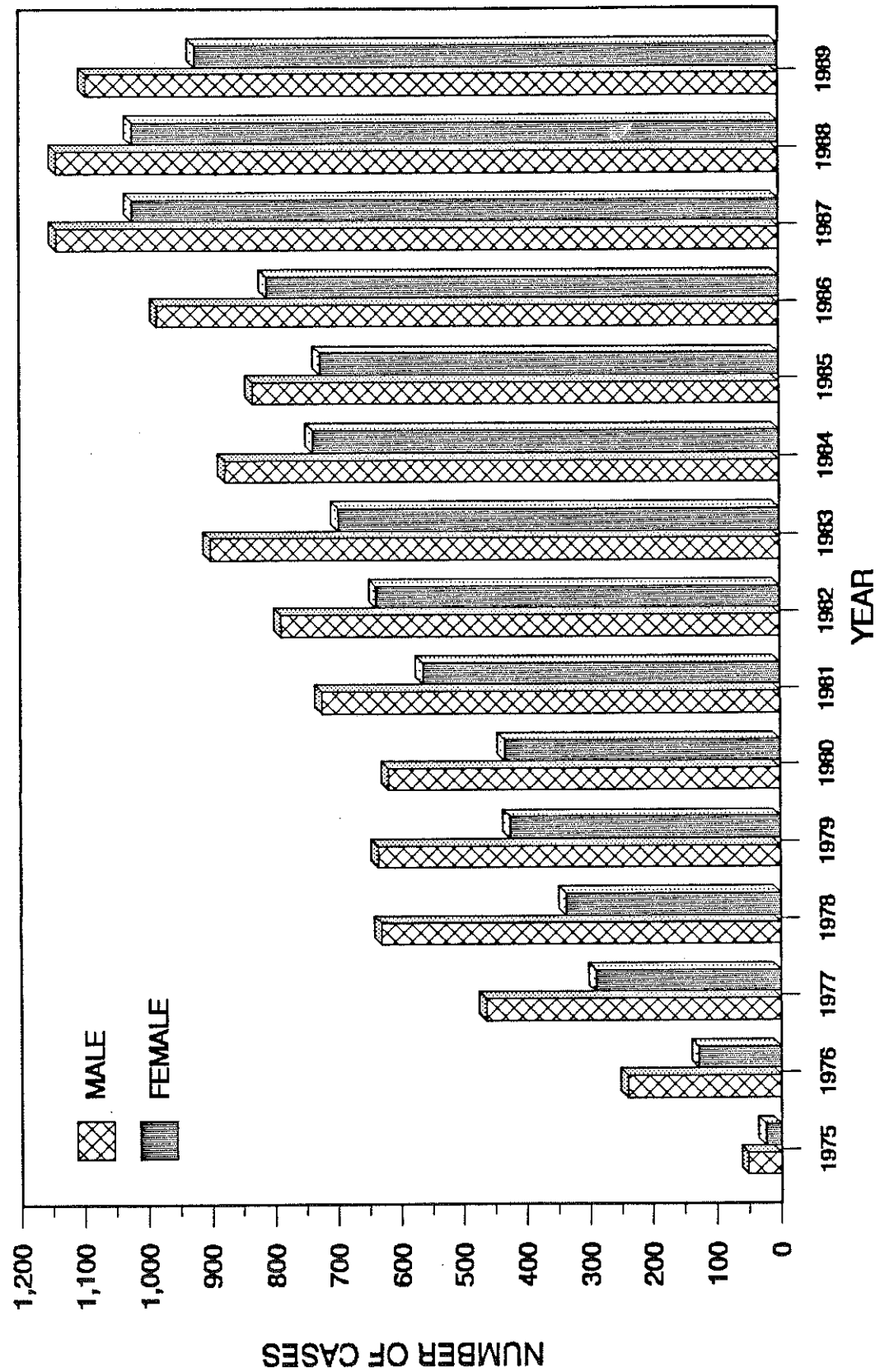
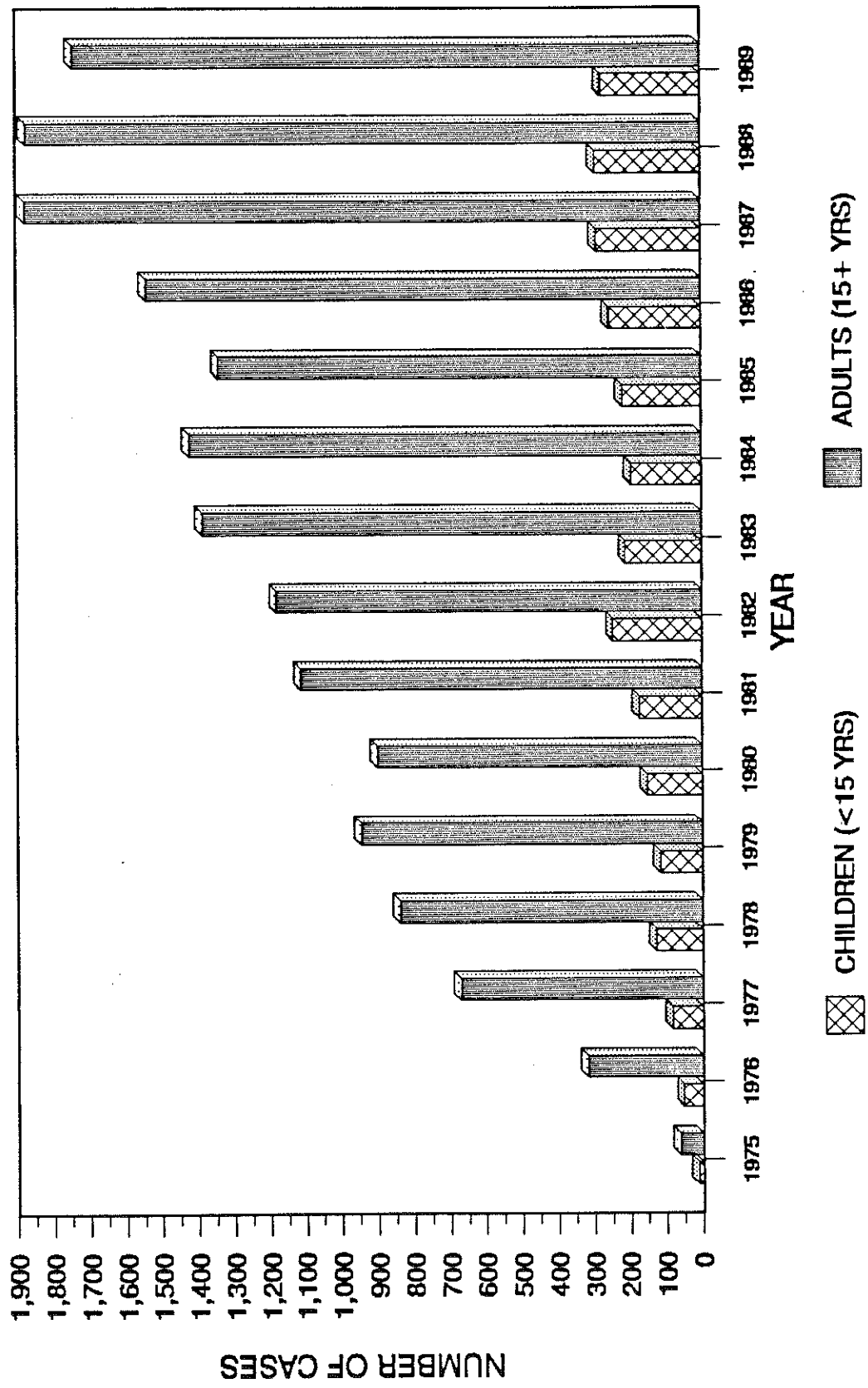


FIGURE 26

YEARLY DISTRIBUTION OF 19,885 CASES (CHILDREN VS ADULTS) 1975 - 1989



APPENDIX A

1989 SPECIAL STUDY REQUESTS FROM TUMOR REGISTRY DATA

January	
Lung Cancer Incidence By Year (1975-1987)	Dr. R. Wierzbicki
Non-Ewing's and Non-Osteogenic Sarcomas of Bone	Dr. R. Wierzbicki
Breast Cancer Patients (1980-1987)	Dr. M. El-Senoussi
Hypopharyngeal Tumors (last 10 years)	Dr. Z. Mahasin
Nasopharynx Cancer at KFSH&RC	Dr. S. Al Sedairy
Craniopharyngioma (1984-1989)	Dr. O. Odugbusen
Thyroid Cancers Accession By Year	Dr. N. Woodhouse
February	
Summary of Cancer Cases for Fiscal Year 1408-1409	Dr. A. Al Dobson
Breast Cancer Patients Seen in Past Five Years	Dr. A. Ali
Head and Neck Tumors (1975-1985)	Dr. A. Otieshan
Cancer of the Oral Cavity	Dr. M. Abuze
March	
Hodgkin's Lymphoma in Children Under Six Years	Dr. R. Sabbah and Dr. A. Nasserallah
April	
Soft Tissue Sarcomas (1986-1988)	Dr. H. Schultz
Adult Lymphoma	Dr. D. Esmail
Pediatric Cancer Patients By Primary Physician-1988	Dr. K. Sackey
May	
No Requests	
June	
Number of Patients with Malig. Lymphoma (1981-1988)	Dr. P. Ernst
1988 Annual Report Statistics	Ms. S. Willoughby
July	
All Adult NHL's (including Extranodal but not Histiocytosis)	Dr. M. Amer
Acute Lymphoid Leukemia Patients	Dr. H. Clink
ANL 88 Patients	Dr. R. Aur
Comparison of V Codes with CHIC Database	Ms. S. Willoughby
August	
Rhabdomyosarcoma Cases (1984-1989)	Dr. S. Crankson and Dr. S. Ahmed
Adult Acute Leukemia Patients (July 1988-June 1989)	Dr. D. Spence
September	
Children with Wilm's Tumor or Neuroblastoma	Dr. K. Sackey
Adult NHL's (1984-1987)	Dr. M. Amer

Appendix A con't

October	
Head and Neck Tumors in Children	Dr. A. Ali
Hodgkin's Disease in Children (1975-1987)	Dr. R. Sabbah
NHL in Children (Nov. 1986-1987)	Dr. R. Sabbah
Aminoglutethimide Treatment in Breast Cancer	Dr. A. Eezzat and Dr. I. Showaiber
Information on Breast Cancer Patients(1984-present)	Dr. A. Mc Elroy
Testicular Cancers (1982-Oct. 1989)	Dr. A. Bedikian
Thyroid Patients with External Radiation	Dr. B. Devi
Number of Children with Cancer (1988-1989) By Specialty	Dr. K. Sackey
Number of Patients by Physician (1988-Oct. 1989)	Dr. A. Ezzat
Thyroid Cancer Patients Receiving I131	Dr. S. Bakheet
Patients with Malignant Pleural Effusion	Dr. R. Wierzbicki and Dr. M. Dossing
November	
Unknown Primary of Head and Neck Origin	Dr. Z. Mahasin
NHL Adult Patients (1975-1988)	Dr. M. Amer
Cervix Cancers (1987-1988)	Dr. M. El-Senoussi
Adult AML's (Jul. 1989-Nov. 1989)	Dr. D. Spence
Retinoblastomas (1984-1988)	Dr. M. Banna
December	
Malignant Mesotheliomas	Dr. M. Dossing
Gestational Trophoblastic Disease, Molar Pregnancies, and Choriocarcinomas (1979-1989)	Dr. Y. Bakri
Thymoma (1983-1988)	Dr. R. Wierzbicki
Medullary Carcinoma of Thyroid	Dr. B. Devi
Hodgkin's and NHL's of Thyroid	Dr. S. Akkad

APPENDIX B

1989 TUMOR COMMITTEE MEMBERS

S. El Akkad, M.D., Radiation Oncology
A. Ali, M.D., Pathology **
J. Atwood, C.T.R., Tumor Registry
Y. Bakri, M.D., Obsterics/Gynecology
A. Bedikian, M.D., Medical Oncology *
P. Ernst, M.D., Medical Hematology (Oct. 1989)*
W. Greer, Ph.D., BS&SC Research Centre
M. Hannan, Ph.D., B&MR Research Centre
P. McArthur, M.D., Surgery
L. NouNou, Social Services
R. Pavillard, M.D., Quality Assurance
P. Pederson, MD., Obstetrics & Gynecology
R. Rooney, M.D., Orthopedic Surgery
S. Al Sedairy, Ph.D., B&MR Research Centre
J.O. Sieck, M.D., Medicine
S. Willoughby, C.T.R., Tumor Registry

* Tumor Committee Chairman
** Deputy Chairman

APPENDIX C

SUMMARY OF CASES PRESENTED
KFSH&RC TUMOR BOARD - 1989

SITE	NO.
SARCOMA	15
Rhabdomyosarcoma	8
Leiomyosarcoma	2
Spindle Cell Sarcoma	1
Synovial Sarcoma	1
Undifferentiated Small Cell Sarcoma	1
Hemangiosarcoma	1
Malignant Fibrous Histiocytoma	1
NON-HODGKIN'S LYMPHOMA	11
HODGKIN'S DISEASE	8
GYNECOLOGIC	3
Placenta (Choriocarcinoma)	2
Ovary	1
GENITO-URINARY SYSTEM	2
Wilm's Tumor	1
Testis	1
HEMATOPOIETIC & RETICULOENDO. SYSTEM	3
Acute Lymphoid Leukemia	1
Chronic Lymphoid Leukemia	1
Acute Myelomonocytic Leukemia	1
BONE	12
Osteogenic Sarcoma	8
Ewing's Sarcoma	4
THYROID	14
BREAST	5
NEUROBLASTOMA	4
RETINOBLASTOMA	3
SKIN	2
LIVER	2
LUNG	2
CONNECTIVE TISSUE	2
NEUROFIBROMATOSIS	1
COLON	1
RECTUM	1
ANAL CANAL	1
GALLBLADDER	1
PANCREAS	1
SUPRARENAL GLAND	1
UNKNOWN PRIMARIES	3
BENIGN AND UNCERTAIN BEHAVIOR	7

Tumor Board Moderator: Dr. H. Schultz

APPENDIX D

1989 SUMMARY OF TUMOR CONFERENCE TOPICS

15 January	The Interactionn of Nutrition and Drugs	Dr. J. Dicerson
22 January	Case Presentations	Dr. J. Sieck and Dr. R. Deniord
05 Febrauary	Adjuvant Surgery or Adjuvant Chemo in Early Stages of Breast Cancer	Dr. Amin
19 February	Cervical Carcinoma - Clinical & Epidemiological Aspects - KFSH Experience	Dr. M. El-Senoussi
26 February	Case Presentations	Dr. Norlen and Dr. Clink
05 March	Fixation in Radiotherapy - Report on Trial with a New System	Dr. C. Gadeberg
05 March	Survival Statistics Part II	Dr. E. Devol
	Conservative Management of Breast - KFSH Experience	Dr. M. El-Senoussi
26 March	Case Presentation	Dr. M. Hannan
	Sandostatin Treatment of Endocrine Tumors	Dr. N. Woodhouse
28 May	Ace Inhibitors and Calcium Antagonists	Dr. R. Ferguson
04 June	Mechanisms of Hypertension	Dr. C.M. Kjellstrand
11 June	Multisystem Langerhans Cell Histiocytosis	Dr. A. Martins
18 June	Colorectal Cancer	Dr. W. Isbister
25 June	Case Presentations	Dr. B. Clubb Dr. R. Wierzbicki Dr. Strake
23 July	Case Presentations	Dr. M. Borghol Dr. M. El-Senoussi
30 July	Topics on Practical Oncology (Report from ASCO & AACR Annual Meeting	Dr. K. Sackey and Dr. M. Amer
06 August	Cancer of Larynx - Wayne State University Experience	Dr. K. Ahmed
27 August	Case Presentations	Dr. K. Sackey Dr. A. Bedikian
17 September	Brain Mets in a Child with Abdominal Neuroblastoma	Dr. K. Sackey, Drs. Akhtar & Jorulf
15 October	Five Year Experience of Multiple Combination Chemotherapy for Newly Diagnosed Childhood ALL in S. Arabia	Dr. R. Aur
	KFSH Neutron Therapy on Head & Neck Cancer (An Update)	Dr. S. El-Akkad
22 October	Treatment of Hairy Cell Leukemia with Deoxycoformycia	Dr. B. Dalal
29 October	Childhood ALL - ALL-KFSH-84 and 87 Protocols (01 Jan. 1984-15 Oct. 1989)	Dr. R. Aur

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05 November	Case Presentations	Dr. S. Ingemansson Drs. Al-Amro & Hainau
19 November	Disorders of Magnesium Homeostasis	Dr. Sutton
26 November	Case Presentations	Drs. P. Ernst, Sofayan, Bold & Khaled
03 December	Classification of Lung Carcinoma	Dr. Bedrossian
17 December	Bone Marrow Transplantation Program Part I	Dr. D. Spence
31 December	Case Presentations	Dr. Schultz Dr. Shabanah
	Occupational & Physical Therapy for Cancer Patients	Ms. M. Tarmichael Ms. J. Urich

Tumor Conference Moderators: Dr. A. Ezzat, Dr. A. Bedikian, and Dr. R. Wierzbicki.

VI. GLOSSARY OF TERMS

Accessioned: Patients are entered into the Tumor Registry by the year in which they were first seen at KFSH&RC for each primary cancer.

Age of Patient: Recorded in completed years at the time of diagnosis for analytic cases. For nonanalytic cases, it is reported at age first entered into the Tumor Registry.

Analytic Cases: Cases which were first diagnosed and/or received all or part of their first course of treatment at KFSH&RC.

Nonanalytic Cases: Cases diagnosed elsewhere and receiving all of their first course of treatment elsewhere.

Case: A diagnosis or finished abstract.

Patient: An individual who has cancer. A patient who has more than one primary will be reported as multiple cases.

Stage of Disease: Determined at the time of the first course of treatment.

SEER Summary Staging Guide:

In Situ: Tumor meets all microscopic criteria for malignancy except invasion.

Local: Tumor is confined to organ of origin.

Regional: Tumor has spread by direct extension to immediately adjacent organs and appears to have spread no further.

Distant: Tumor has spread beyond immediately adjacent organs or tissues by direct extension and/or has either developed secondary or metastatic tumors, metastasized to distant lymph nodes or has been determined to be systemic in origin.

Unknown: Tumor is said to be unknown when the stage cannot be determined by the medical record or a medical authority.

American Joint Committee on Cancer - TNM Staging: A classification scheme based on the premise that cancers of similar histology or site of origin share similar patterns of growth and extension:

T+N+M = Stage
(T) tumor size
(N) node involvement
(M) distant metastases

First Course of Treatment: The initial tumor-directed treatment or series of treatments, usually initiated within four months after diagnosis.

Crude Relative Frequency: The proportion of a given cancer in relation to all cases in a clinical or pathological series.

VII. REFERENCES

1. "Reporting of Cancer Survival and End Results," Manual for Staging of Cancer, third edition, American Joint Committee on Cancer, Philadelphia, Lippincott, 1988.

2. Summary Staging Guide, SEER Program, U.S. Department of Health Services, National Institutes of Health, Publication No. (NIH)77-1448, Washington, 1977.

3. Cancer Patient Survival: SEER Program, 1973-1979, JNCI, Vol. 70, No. 4, April 1983.

4. Third National Cancer Survey, NCI Monograph No. 41. DHEW Publication, 1975.

5. Clinical Oncology, A Multidisciplinary Approach, 6th Edition, American Cancer Society, 1983.

6. Cancer Facts & Figures - 1989, American Cancer Society

KFSH & RC CASES TO BE INCLUDED IN THE REGISTRY

REPORTABLE LIST

All cancer cases with active disease or history of malignancy, diagnosed or receiving cancer treatment, seen as inpatients or outpatients within the hospital are to be included in the registry. Also included are patients with known clinical evidence of cancer (active disease) but who are treated for supportive, symptomatic or other reasons. An example would be a patient with a broken leg, who also has known clinical evidence of prostate cancer.

The KFSH&RC Tumor Registry definition of reportable cancer is as follows:

All cases with a morphology behavior code of "1, 2, 3, 6, or 9" listed in the ICD-O are reportable.

1 = Uncertain whether benign or malignant
Borderline Malignancy

2 = Carcinoma in situ (intraepithelial, noninfiltrating, noninvasive)

3 = Malignant, primary site

6 = Malignant, metastatic site, secondary site

9 = Malignant, uncertain whether primary or metastatic site

Note also that if a "O" (benign) behavior code term in the ICD-O is verified as in situ or malignant by a pathologist, it becomes a reportable case.

Benign brain tumors (T-191) and central nervous system (T-192) tumors are reportable to the Registry.

BEHAVIOR CODE "1"

All tumors designated with behavior code "1" are reportable.

Examples of tumors of uncertain behavior that are abstracted and followed by the Registry are:

Bronchial Adenoma (8140.1)
Carcinoids of the Appendix (8240.1)
Carotid Body Tumor/Glomus Jugulare (8692.1, 8690.1)
Chemodectoma (8693.1)
Chronic Lymphoproliferative Disease (9970.1)
Chronic Myeloproliferative Disease (9960.1)
Craniopharyngioma (9350.1)
Desmoid Tumor (8821.1)
Fibromatosis, Aggressive (8821.1)
Myxopapillary or Papillary Ependymoma (9394.1, 9393.1)
Ganglioglioma (9505.1)
Giant Cell Tumors of the Bone (9250.1)
Giant Pigmented Nevus of Skin (8761.1)
Subependymal Glioma (9383.1)
Hemangioblastoma (9161.1)
Hydatidiform Mole, Invasive (9100.1)
Granulosa Cell Tumor (8620.1)
Meningiomatosis (9530.1)
Muco-epidermoid Tumor (8430.1)
Myelodysplastic Syndrome (9980.1)
Neurofibromatosis (9540.1)
Papilloma of Urinary Bladder (8120.1)
Paraganglioma (8680.1)
Pineocytoma/Pinealoma (9361.1, 9360.1)
Polycythemia Rubra Vera (9950.1)
Sex-Cord Stromal Tumor (8590.1)
Sweat Gland Tumor (8400.1)
Von Recklinghausen's Disease (9540.1)
Villous Adenomas of GI Tract (8261.1)

BEHAVIOR CODE "0"

Following is a list of benign tumors that are abstracted and followed by the Registry:

Aplastic Anemia (9980.0)
Ameloblastoma (9310.0)
Aneurysmal Bone Cyst (9262.0)
All benign intracranial tumors - Meningiomas (9530.0)
Choroid Plexus Papilloma (9390.0)
Cavernous Hemangioma (9121.0)
Chondroblastoma (9230.0)
Eosinophilic Granuloma / Histiocytosis X (9722.0)
Familial Polyposis Coli (8220.0)
Hemangioma (9120.0)
Juvenile Angiofibroma (9160.0)
Melanotic Neuroectodermal Tumor (9363.0)
Mixed Tumor, Salivary Gland Type (8940.0)
Mucinous Cystadenoma (8470.0)
MyoepithelialTumor (8982.0)
Myxoma (8840.0)
Neurilemmoma (9560.0)
Neurofibroma (9540.0)
Pheochromocytoma (8700.0)
Adenomas of Thyroid, Papillary, Follicular, Mixed (8260.0, 8330.0, 8340.0)
Pituitary Adenoma/Chromophobe Adenoma (8140.0, 8270.0)
Plexiform Neurofibroma (9550.0)
Pleomorphic Adenoma (8940.0)
Prolactinoma (8140.0)
Osteoblastoma (9200.0)
Rhabdomyoma (8900.0)
Schwannoma (9560.0)
Thymoma (8580.0)
Xanthofibroma (8830.0)

Do not include:

Adrenal Cortical Adenomas (8370.0)
Chondromas (9220.0)
Lymphangioma (9170.0)