REVIEW OF WILMS' TUMOUR IN MALAYSIAN CHILDREN

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SYNOPSIS

A review of all cases of nephroblastoma admitted to the University Hospital over a 10 year period reveals that its incidence relative to the other childhood tumours and epidemiological features are similar to other centres. The majority of patients presented with either stage III or IV disease. During the period 1968-1972 the number of defaulters was high and survival was poor. Following the introduction of treatment protocol, default rate has fallen and 5 of 7 patients have survived more than 2 years. Earlier referral and education of the parents should help improve the outcome for children with Wilms' Tumour in Malaysia.

INTRODUCTION

Nephroblastoma accounts for 5 per cent of all malignant disease in childhood and affects 1 in 200,000 children under the age of 15 years (Marsden and Steward, 1968). Its incidence has not changed significantly over the years but there has been a decline in mortality rate from a hopeless prognosis to around 80-90 per cent two-year survival with radical nephrectomy, radiation and combination chemotherapy (Jenkin, 1976). Thus far, no studies have emerged on Wilms' tumour in Malaysian children and information is not available on the epidemiology, clinical features and response to therapy as compared with other countries.

This study reviews the epidemiological and clinical features, the staging and the response to treatment prior to and following the introduction of treatment protocol in children with Wilms' tumour seen at the University Hospital, Kuala Lumpur over a ten year period.

MATERIALS AND METHODS

All children with nephroblastoma admitted to the Paediatric Unit, during the period 1968 through 1977 were reviewed. The diagnosis was based on tissue examination in all cases.

All pre-protocol patients except one who presented with terminal disease, received primary treatment consisting of surgery and a 5 day course of dactinomycin (15 ug/kg/day). Four patients were also referred for post-operative radiotherapy.

Treatment protocol which includes surgery, radiotherapy and chemotherapy was introduced in 1973. Protocol patients were treated according to the Royal Children's Hospital, Melbourne, protocol (Jones and Campbell, 1976) and those diagnosed in 1977 were treated according to the Medical Research Council Second Nephroblastoma Trial Protocol. The system of staging described in the National Wilms' Tumour Study (D'Angio, 1972) was employed. The details of the patients' illness, physical findings, investigations, pathological findings, staging, response to therapy and subsequent outcome were reviewed and compared with other series.

RESULTS

Epidemiology

During the index period, 14 cases of Wilms' tumour were admitted to the Unit. The total number of paediatric admissions during this period was 24,532 cases. Wilms' tumour accounts for 0.57 per 1000 hospital admissions and 5.4 per cent of all childhood malignancies seen in the Unit.

Ethnic Distribution and Sex

The 14 children comprised 6 Chinese, 5 Malays and 3 Indians, who are representative of the racial composition of patients attending our Unit. There were 6 males and 8 females. The apparent preponderance of girls is probably not significant as males and females are usually equally represented (Breslow et al, 1970).

Age at diagnosis

The mean age at diagnosis was 2 years, and ranged from 6 months to 4 years; 85 per cent of the children were less than 3 years old. These findings are similar to those of other series (Sullivan, Hussey and Ayala, 1973; Lemerle, Tournade, Sarrazin and Gerard-Marchant, 1975.

Clinical Features

The mean duration of symptoms prior to diagnosis was 2-7 months and ranged from 1 week to 13 months. Ten of the 14 patients had symptoms for less than 2 months. The commonest symptoms were abdominal distension, anorexia and pallor as seen in Table I.

The left kidney was involved in 10 cases and the right in 4 cases respectively. This phenomenon has been noted by other authors but no explanation is available (Lattimer and Conway, 1968, Silva-Sosa and Gonzalez-Cerna, 1966; Westra, Keiffer and Mosser, 1967). There was no association with congenital hemihypertrophy or aniridia but one patient had a double collecting system and double ureter.

Investigations

Urine examination revealed microscopic haematuria in 3 of 13 cases. Blood urea was elevated in 2 patients. Intravenous pyelogram was abnormal in all instances comprising either a soft tissue mass, a non-functioning kidney or a distorted calyceal system with displacement of the kidney. Chest X-ray and skeletal survey disclosed no abnormalities. The diagnosis was confirmed by examination of the excised kidney in 13 patients and from renal biopsy in one case.

Treatment and Survival

Pre-protocol period (1968-1972)

The relevant details of the 7 patients with Wilms' tumour admitted during this period are recorded in Table II. Three children had stage I disease of whom 2 were lost to follow up while the third has survived more than 6 years without recurrence of tumour. All three patients with stage III disease defaulted treatment. One patient presented terminally with stage IV disease.

Protocol period (1973-1977)

Seven patients were admitted during this period; 3 had stage I disease, 1 had stage II disease and 3 had stage III disease respectively. One of the patients with stage I disease died on the ninth post-operative day of septicaemia and peritonitis while the other 2 are alive and well 4 years and 2½ years after surgery respectively. The patient with stage II disease has survived 3

TABLE I
PRESENTING SYMPTOMS AND SIGNS IN 14 PATIENTS WITH WILM'S TUMOUR

Symptoms	No. of cases	Signs	No. of cases
Abdominal distension	14	Abdominal mass	14
Anorexia	5	Hepatomegaly	3
Pallor	5	Emaciation	3
Fever	4	Splenemegaly	1
Weight loss	4	Gen. lymphadenopathy	1
Vomiting	3		
Haematuria	2		
Scanty urine, constipation, weakness, cough, Lt. testis bigger than Rt. testis	1		

TABLE II
STAGING AND OUTCOME OF TREATMENT IN WILMS' TUMOUR

Pre-Protocol Period (1968-1972)

Stage	No. of cases	Treatment	Outcome
I	3	Surgery and DTM daily x 5 days	1 A + W 6 years later;
			2 LTFU (1 with recurrence at 8 months)
III	3	Surgery and RT and DTM x 5 days	All LTFU
IV	1	Biopsy	Discharged as terminal case
		Protocol Period	
I	3	2 RCH and 1 MRC	1 died (post-op. peritonitis);
			2 A + W (4 years and 2½ years later)
II	1	MRC	A + W 3 years later
III	3	2 RCH	1 LTFU at 19 months (well)
			1 bone metastases at 1 year LTFU
		1 MRC	Bone and liver metastases at 1 year. A + W on VCR + ADM + DTM 16 months later

RCH — Royal Children's Hospital, Melbourne, Protocol
MRC — Medical Research Council, Protocol
RT — radiotherapy
LTFU — lost to follow up
A + W — alive and well

years. One patient with stage III disease was disease free when she was lost to follow up at 19 months; 2 others developed metastases, 1 year after surgery, of whom one was lost to follow up while the other remains well on combination chemotherapy 16 months after relapse.

Overall the prognosis of patients during the pre-protocol period was poor with only one known long-term survivor. With the introduction of treatment protocol 5 to 7 patients have survived 19 months to 4 years without recurrence of tumour.

DISCUSSION

Malignant disease has now emerged as the second most important cause of death among medically certified and inspected deaths in West Malaysia (Lin, 1979). Brain tumour, teratoma, neuroblastoma and Wilms' tumour constitute the commonest solid tumours in Malaysia children (Sinniah personal observations). Although there is a variation in the relative incidence of the other tumours, Wilms' tumour is reported to have a similar incidence from country to country and can be used as a standard index with which the incidence of other tumours can be compared and computed (Innis, 1972). It accounts for 5.4% of all childhood malignancies seen in our Unit and is comparable to that reported in other centres (Marsden and Steward; 1966. Hammond, Bleyer, Hartmann, Hays and Jenkin, 1978). There was no association with congenital hemihypertrophy or aniridia in our series but the incidence of these abnormalities is small and is not reflected in our limited number of cases.

The epidemiological and clinical features of our cases are similar to those found in other series. Most of our patients presented with advanced disease. The default rate was high in the earlier years with consequent adverse effects on prognosis. But following the introduction of protocol treatment the number of defaulters decreased and prognosis has improved remarkably to around 70 per cent 2 year survival which can be considered tantamount to cure rate as so few relapse occur after this period (Lemerle, Tournade and Marchant, 1976). With earlier referral and better organisation of treatment there should be scope for further improvement.

Our doctors and the lay public should be made aware of the improved and favourable outlook for children with Wilms' tumour and be encouraged to refer or bring the children early for treatment.

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