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A Review of the causes of death in adult medical wards of Korle Bu Teaching Hospital, Accra, Ghana

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Summary

A review of 462 deaths occurring in a 1-year period from adult medical wards at the Korle Bu Teaching Hospital is undertaken. Males are found to outnumber females in the ratio of 2:1.

The 25–44 and the 45–64 age groups are found to contain the highest incidence of death.

The three main causes of death are found to be strokes, heart diseases and liver diseases. Predisposing factors are discussed.

Delay in seeking medical help is thought to contribute in some measure to the overall mortality rate.

Résumé

Néut d'avoir une révue de 462 morts subit à l'hopitâl médical de Korle Bu pendant un an. On a trouvé que les hommes sont nombreux que les femmes dans une proportion de 2 à 1.

Ceux de groupe d'âge de 25 à 44; et de 45 à 64 ont les plus incidents de morts.

Les trois principales causes de la mort sont les coups, la maladie du cœur et la maladie de la foie. Des facteurs predisposés sont aussi discutés.

Le delai d'avoir le soin médical contribué, dans une certaine mesure a un taux total de mortalité.

Introduction

Not a single day passes without an announcement in the local papers or on the rediffusion system of the death of A.N. Other 'which sad event occurred at the Korle Bu Teaching Hospital'. That in itself is not surprising considering the size of the hospital, one of 1300 beds and also the fact that for various reasons not a few are admitted *in extremis*. But to the layman, it must appear that people go to the Korle Bu Teaching Hospital only to die! The doctor on the other hand, remembers his successes though he is not unmindful of his failures. He surely must understand and must share the thoughts of Heracles on the question of death.

It was Heracles who, with a high content of alcohol flowing in his veins and in a moment of sparkling brightness announced that 'Death is a debt which we all must pay', Euripides, 485–406 B.C. He was just stating an obvious fact. Yet this fact of life or rather death, in spite of the philosophy of the Epicureans to the effect that 'you must eat and drink for tomorrow you die', has not been accepted down the ages. It is tempting to suggest that physicians being the scientists they are, can bring themselves round to accept this fact some time. What is unacceptable though is the manner in which some deaths occur either because they are 'sudden, unexplained and unexpected' as defined by Glaister & Rintoul (1966); or when death occurs in the younger age groups, physicians are unable to sing with the Greeks the refrain: 'Those whom the gods love die young.'

It is these two considerations that prompted this review to try and find out some of the adverse factors that operate in the dead of the adult wards of the Korle Bu Teaching Hospital.

Materials and methods

The Department of Medicine and Therapeutics organizes monthly mortality conferences at which the causes of death in the 160 bedded unit are analysed and discussed. It is these facts which have been collected and collated and subsequently cross-checked with copies of death certificates issued

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during this period, of one year from 1 October, 1971–30 September, 1972.

During the period under review, there were 2850 admissions, made up of 1694 males and 1156 females. There were 462 deaths of whom 320 were males and 142 females. The ages of the patients ranged from 10 to 92 years.

TABLE 1. Age and sex incidence of 462 deaths during 1 year

Sex	Age groups in years					Total
	5–14	15–24	25–44	45–64	Over 65	
Male	4	28	108	114	66	320
Female	9	35	20	51	27	142
Total	13	63	128	165	93	462
% of all deaths	3	14	27	36	20	100

Male:Female = 2:1.
% of total deaths to all admissions = 16.
% of all deaths of one sex to all admissions = 11 (M), 5 (F).
% of all deaths of one sex to all admissions of one sex = 19 (M), 12 (F).
% of all deaths of one sex to all deaths = 69 (M), 31 (F).

Discussion

Mortality

Data concerning mortality is difficult to obtain and in any case deficiencies in using various mortality measures have been adequately dealt with in the Population Bulletin of the United Nations in 1962.

The crude rates in Africa, south of the Sahara, were estimated to be 25 per 1000—this was the highest recorded (U.N., 1967). The mortality rate that is discussed here is that of hospitalized patients and therefore there cannot be a basis for any meaningful comparisons.

The overall mortality of all admissions was 16%. This compares with the 19% as calculated from the figures of Lauckner, Rankin & Adi (1961). These rates would have been said to be favourably comparable but for the fact that tuberculous infections seem to occupy an important place in the series of Lauckner *et al.* (1961).

Sex

Male deaths constituted 19% of all male admissions, 11% of all admissions and 69% of all deaths. The comparative figures for females were 12% of all female admissions, 5% of all admissions and 31% of all deaths. It would appear the fatality rate is higher in males than in females.

Tables 2 and 3 show the contribution of pneumonias, heart failures, cirrhosis of the liver, primary hepatoma, chronic renal failure, strokes, meningitis and diabetes, to the high mortality in the males. It is not quite clear why males should succumb more to these diseases than females.

TABLE 2.

	Male	Female
(A) Respiratory		
Pneumonias	15	7
Lung abscess and empyema	4	1
Pulmonary fibrosis	1	0
Pulmonary tuberculosis	1	0
Pneumoconiosis	1	0
Status asthmaticus	1	0
	23	8
Average age of pneumonias: Male—47 years (range 26–72 years) Female—46 years (range 13–75 years)		
(B) (i) Cardiovascular		
Heart failure	30	14
Pericardial disease	3	2
Bacterial endocarditis	5	3
Myocardial infarction	3	1
Ruptured aortic aneurysm	3	0
	44	20

(ii) Aetiology of heart failure

	Male	Female	Total
Obscure	13/30	8/14	21/44 = 48%
Hypertension	23/30	4/14	16/44 = 36%
Valvular	3/30	2/14	5/44 = 11%
Pulmonary	2/30	0	2/44 = 4·5%

(C) Gastrointestinal tract	Male	Female
Hepatic carcinoma	35	5
Cirrhosis of the liver	14	4
Dysenteric infection	5	0
Obstructive jaundice	2	0
Liver abscess	2	1
Infectious hepatitis	3	7
Gastrointestinal bleeding	7	1
	68	18

Primary hepatoma—36/40, i.e. 90%.

(D) Renal		
Chronic failure	24	18
*Acute failure	3	0
	27	18

* Two due to glomerulonephritis; one due to severe haemorrhage.

TABLE 2 (*continued*)

	Male	Female
(E) Nervous system		
Strokes	64	35
Meningitis	18	2
Tetanus	0	20
Undiagnosed coma	1	1
Status epilepticus	1	0
Total excluding tetanus	74	38
(F) Metabolic		
Diabetes mellitus	12	3
Thyrotoxicosis—Crisis	0	1
	12	4
(G) Neoplasms		
Carcinoma of stomach	2	1
Carcinoma of pancreas	0	1
Carcinoma of lungs	1	0
Carcinoma of colon	1	0
Pelvic carcinoma	0	2
Disseminated carcinoma	0	2
Renal adenocarcinoma	1	0
Pleural mesothelcoma	1	0
Hepatic carcinoma	35	5
Hepatic Carcinoma = 40/52—77%		
Primary Carcinoma = 36/52—69%		
(H) Leukaemias		
Acute	5	2
Chronic	1	1
(I) Hodgkins	2	0
(J) Burkitt's lymphoma	0	1

TABLE 3. Percentage distribution by system of some the causes of the 462 deaths

System	No. of deaths	% of deaths
Nervous excluding tetanus	112	24
Gastrointestinal, including hepatomas	86	19
Cardiovascular	64	14
Renal	45	10
Respiratory	31	7
Hormonal, mainly diabetes	16	3
Neoplasms, excluding primary hepatoma	16	3
Leukaemias and lymphomas	12	3
Miscellaneous	80	17
Total	462	100

Age

The age group of 45–64 years had the highest percentage of deaths, with 36%. There was no sex difference in that age group as shown in Table 1. This age group predominates on account of the highest incidences of strokes, hepatic carcinoma and heart failures; see Table 4.

The next important age group is that of the 25–44 years with an overall mortality of 27%. Again, it is the same three diseases as in the 45–64 age group plus meningitis that are responsible for a good many of the deaths.

The average age of death of the males was 47·4 years and 43·4 years for females. For all, the average was 45·4 years. Binder (1961), found the average age in Ghana to be 39·3 years. Though this present figure is a little higher than in 1961, it is still below that found in Europe and the U.S.A.

Diseases

Nervous diseases, mainly strokes and meningitis constituted the highest single cause of death. The twenty deaths from tetanus in females do not give the complete picture as the males were admitted to a specialized unit, the female side of which was undergoing repairs. Nevertheless, the mortality from tetanus has been estimated as 39·3%; Pobee (1971).

The main contributory cause to the predominance of nervous diseases as a major cause of mortality is stroke. Laing (1968) believes brain haemorrhage is an important cause of sudden deaths in adults in Ghana. Haddock (1970) finds that ischaemic episodes are commonest as a cause of stroke, a viewpoint shared by Adeloye, Osuntokun & Odeku (1970) working in Nigeria.

Strokes constituted 21·4% of all deaths in this selected population and the greatest hospital incidence was in the 45–64 years group. Cerebrovascular diseases were found to be amongst the three main causes of death in forty countries, accounting for 12·5% of all deaths, with the highest incidence in the age group 55–64 years; W.H.O. (1971a).

Hypertension defined as a blood pressure above 160 and/or 95 was found to be present in a third of the cases in Ghana. About 91% of the stroke patients were 45 years and above. W.H.O. (1971b) defines hypertension in the age group 30–64 years as 160 and/or 95. This significant association of hypertension with strokes confirms the view of Haddock (1970) that hypertension together with obesity and diabetes are important predisposing factors in the genesis of strokes in Ghana. Many of the strokes

TABLE 4. Age and sex distribution of some of the important causes of death

Disease	Sex	Age groups in years					Total	Grand Total
		5–14	15–24	25–44	45–64	Over 65		
Strokes	M	0	0	8	35	23	66	101 (22%)
	F	0	0	1	17	17	35	
Heart failure	M	0	2	6	10	12	30	44 (10%)
	F	1	3	2	4	4	4	
Chronic renal failure	M	0	1	12	5	6	24	42 (9%)
	F	2	7	4	5	0	18	
Hepatic carcinoma	M	0	2	14	15	4	35	40 (9%)
	F	1	1	0	2	1	5	
Pneumonias	M	0	1	5	7	2	15	22 (5%)
	F	1	1	0	3	2	7	
Meningitis	M	0	3	9	5	1	18	20 (5%)
	F	0	0	1	1	0	2	
Tetanus	M	0	0	0	0	0	0	20 (5%)
	F	2	12	4	2	0	20	
Cirrhosis of the liver	M	0	1	9	3	1	14	18 (4%)
	F	1	0	1	2	0	4	

TABLE 5. Some causes of death as percentage of all causes of death

Disease	Sex	No. of deaths	Percentage	Percentage of all deaths
Strokes	M	64	65	
	F	35	35	
	All	99		21
Meningitis	M	18	90	
	F	2	10	
	All	20		4
Heart failures	M	30	68	
	F	14	32	
	All	44	—	10
Chronic renal failure	M	24	57	
	F	18	43	
	All	42		9
Primary hepatic carcinoma	M	32	89	
	F	4	11	
	All	36		5
All other carcinomas	M	6	50	
	F	6	50	
	All	12		3
Cirrhosis of the liver	M	14	78	
	F	4	22	
	All	18		4
Diabetes mellitus	M	12	80	
	F	3	20	
	All	15		3

with hypertension did not know they had hypertension or had not been receiving what one would call adequate treatment and control.

Meningitis is an important cause of death in Ghana. In the north of Ghana, in the savannah belt, the most offending organism is the *Meningococcus* and cerebrospinal meningitis reaches epidemic proportions in the dry harmattan season of December to February. In the south of Ghana *streptococcus pneumoniae* is the main incriminating micro-organism (Sodhi & Djorjevic, 1966; Haddock, 1971). *Meisseria meningitidis* and *H. influenzae* follow in importance in that order.

Grinker & Sahs (1966) reviewing the literature on the bacteriology of meningitis found *N. menigitidis* to account for 61·5–76·5% of cases and *Streptococcus pneumoniae*, the second highest with 12·7–22·6%. This is true of infection in the age group of 10 years and over. In south Ghana, *Streptococcus pneumoniae* seems to be a virulent organism and there appears to be a fatal delay in patients reaching the hospital in time. These two factors amongst others are known to affect adversely the prognosis in meningitis, Brain (1966).

Gastrointestinal diseases. They are the second highest cause of mortality in this series. Cirrhosis of the

liver and primary hepatomas form the bulk of the diseases in this group. Pobee & Christian (1969), have reviewed the incidence of liver diseases in Accra, and have observed that 86% of hepatomas are on a background of cirrhotic livers. They contend that majority of cirrhotics are cryptogenic, with perhaps virus hepatitis playing an important role. Efforts to reduce the incidence of virus hepatitis by improvement in environmental hygienic and nutritional conditions should at least in the long run reduce the incidence of cirrhosis of the liver.

Cardiovascular diseases. Hypertensive disease is the single most contributory cause of cardiovascular morbidity and mortality. Its important role in cardiovascular illness elsewhere in Africa has been reviewed by Carlisle & Ogunlesi (1972). The place of hypertensive disease becomes even more important when it is remembered that it contributes significantly to vascular lesions of the central nervous system. Hypertension was observed in the majority of chronic renal failures. Some of the obscure heart failures may well have been on a hypertensive basis.

Valvular heart diseases. Mitral incompetence, aortic incompetence and mitral stenosis in that order were often met with. The aetiology of the mitral regurgitation is by no means clear. It is probably rheumatic. Laing (1968) does not mention endomyocardial fibrosis in an analysis of 963 autopsies; and Laing (1969), stresses the importance of the contribution of what he has called obscure myocarditis in heart diseases in Ghana.

Atherosclerosis. Occurs in Ghana and the coronary arteries are readily shown to be involved. Yet the acute manifestations of ischaemic heart disease are rare, Laing (1968) and Dodu (1972). However, Laing (1968) notes the common occurrence of chronic ischaemic myocardial fibrosis due to atherosclerosis.

Bacterial endocarditis. This disease, although of low incidence on the whole, is always serious for the patient. It is therefore a matter of regret that not much is known about the bacteriology of this important disease. Improved methods of blood culture should correct this deficiency to some extent. The majority, however, occur on pre-existing anatomical defects or deformities.

Pneumonia. Clinically, the majority of cases appear to be pneumococcal. The average age of death was 46·5 years. It is known that older age groups are not able to withstand pneumonia as in the young. An interesting feature of about a third of the deaths was the development of massive pulmonary oedema. Indeed, the diagnosis of pneumonia has been missed clinically.

Pulmonary tuberculosis is a disease of major importance in Ghana. There is a special unit for it. Only doubtful cases, as it were, are seen in the general wards for the purpose of making a diagnosis.

Renal diseases. Chronic and renal diseases formed 9% of all deaths. Larbi & Haddock (1973) have evidence to suggest that chronic glomerulonephritis is a very important underlying cause. The place of *Streptococci* and other organisms, viruses for instance in the genesis of glomerulonephritis needs to be properly evaluated.

Metabolic diseases. There was one patient diagnosed as having thyrotoxic crisis. But diabetes mellitus with its complications of ketoacidosis and gangrene is the main contributory cause in this group. For some reason or the other, carbuncles and large abscesses which were frequently found are thought to be diseases with which western type medicine cannot cope. Hence there is almost always a delay and ketoacidosis becomes difficult to treat.

Neoplasms. Primary hepatocarcinoma is the commonest cause of neoplasms in Ghana. This is followed by that of the stomach, cervix and breast. Bronchogenic carcinoma is rare. In the United Kingdom and North America, the frequency in descending order will be the lung, stomach and liver.

Neoplasms of haemopoietic tissue are of the same order of importance and incidence as those of other tissues.

The miscellaneous group consists of known and unknown febrile conditions, malnutrition, etc. In some, the final diagnosis is denied the doctors on account of refusal to give permission for autopsy examination.

Autopsy examination. There were 320 autopsy examinations out of the 462 deaths making an autopsy rate of 69·3%. This relatively high rate accounts for the high percentage of definitive diagnosis in the hepatic carcinomas and the dis-

covery of overwhelming pulmonary oedema in lobar pneumonias, mentioned earlier. Unfortunately the autopsy rate in cardiac conditions was very low. Refusal for most of them, was on the grounds that the patient had been under the care of the hospital for many years and the authorities should know what was wrong with their patients by the time of death! Religious beliefs are also given on occasions as reasons for refusing permission for post mortem examination.

A further improvement in the autopsy rate would help sort out the aetiologies of valvular lesions particularly of mitral incompetence. It will help throw more light on the autopsy diagnosis of chronic myocardial fibrosis that is being increasingly seen in older patients without occlusion of the larger coronary vessels.

Above all it will also help reduce to some extent obscure deaths that puzzle physicians and relatives alike in an environment in which spell binding and witchcraft are by no means of the forgotten past.

Conclusion

The major causes of death are vascular lesions of the nervous system, cirrhosis of the liver and primary hepatoma, heart disease, chronic renal failure and diabetes mellitus. Thorburn & Hayes (1968) refer to the Registrar-General's Report of Jamaica as giving the causes of death as follows: heart diseases 10·1%; cerebrovascular accident 8·8% and cancers 7·6% of all registrable deaths. The respective figures for Accra are heart diseases 10%, strokes 21% and cancers 11%.

Lauckner *et al.* (1961) find deaths from cardiovascular diseases to constitute 11·2%, cerebrovascular disease 1·6% and all forms of neoplasms as 6·0%.

There is no basis for comparison amongst the three centres as the Jamaican figures have been compiled from the general population and the Accra and Ibadan from hospital population. Secondly Ibadan has another general hospital, bigger than the University College Hospital, which takes perhaps a larger proportion of the patient load.

In a good many of the diseases in which effective treatment could have been given, delay in getting to hospital is an important feature.

Factors that cause delays include unavailability of medical facilities in certain areas, long distances to be travelled by patients to reach reasonably equipped hospital centres, lack of faith in or ignorance of 'white man's medicine', with the result that valuable time is lost under the care of traditional healers and even menacingly spiritual healers and 'solar specialists'. Some of the delay may be attributable to referral doctors and superintendents of clinics.

Some of the private clinics are not manned by qualified medical personnel and the hieroglyphics that pass for signatures only serve to confirm this and to hide their identities. If only some of these people in charge could realize their limits, they could send patients earlier than they tend to do now and additional lives may be saved.

Heracles, the son of Zeus 'could go and watch for death, the gloomy garbed Lord of the dead, drinking the libations of the dead hard by the tomb'. He could when he missed him there go to the sunless mansions of Cora.

For all of us mortal physicians we would prefer not to go and watch for death, because at that stage the battle is between two unequals. It cannot be over emphasized the need for public awareness of the importance of early medical consultation.

It will enable physicians to cheat death. It would increase longevity and improve the chances of natural death. Even though in Ghana now no one dies a natural death, it is an aim worth pursuing.

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