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# Coma

## The Common Causes in an African Medical Ward

by

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Coma is a common reason for a patient to be admitted to hospital. It has many causes and the physician attending a comatose patient must determine its etiology at an early stage so that the appropriate therapy can be instituted. The causes of coma are well known but, in a country like Rhodesia, where the pattern of disease differs from that of Europe, it seems that it would be a worthwhile procedure to find out the more usual causes of coma in African patients admitted to hospital. Most of the patients in this ward are adult but a few children (over the age of seven) are seen. The cases were studied consecutively in a prospective manner. Thus in this study, from 1963 to 1965 inclusive, only factors related to the cause of the coma were considered and not the outcome of the disease.

### METHOD AND PROCEDURE

The clinical investigation included examination of the nervous system, ophthalmoscopy and estimation of blood pressure. The extent to which any one system was examined depended on the likelihood of its contributing to the etiology of the coma. For instance if the patient had uraemia

more attention would be directed towards the renal and vascular systems whereas if a likely reason for the coma was believed to lie in the nervous system more concern would be shown for this part of the body. A routine red and white cell count and a blood glucose and urea were estimated. In most cases an X-ray of the chest was taken and where indicated an X-ray of the skull as well as an arteriogram. In all cases a lumbar puncture was performed unless it was contra-indicated because of papilloedema or where the diagnosis did not appear to warrant it. An E.E.G. was required in many of the cases with a cerebral disorder, especially those in whom epilepsy was a feature or where a focal lesion was suspected.

### *Age and Sex*

The largest number of cases seen were between the ages of 20 and 60 years; 13 were under 20 years, the youngest being six years old (intracranial haemorrhage), two of nine years (mushroom poisoning, epilepsy), two of 12 (one typhoid coma, one hepatic coma), four of 14 years (one cerebral malaria, one diabetic coma, one epilepsy and one insulin coma), one of 15 years (hepatic coma) and two of 17 years. There were nine cases over 60 years of age. There was a preponderance of male patients (85 per cent.). The ratio of male to female patients was higher than that of patients not in coma admitted to the same ward (70 per cent.).

The various causes of coma are shown in Table I.

*Table I*  
CAUSES OF COMA IN 121 CASES

Nature of Condition	TOTAL	Male	Female
Hepatic Cirrhosis	43	23	4
Primary Cancer of Liver		11	—
Cause not clear		5	—
Diabetes mellitus	14	9	5
Uraemia	10	8	2
Epilepsy	10	9	1
Carbon monoxide poisoning	7	7	—
Insulin Coma	7	7	—
Intracranial vascular accident or haemorrhage	9	9	—
Acute meningitis	6	4	2
Alcohol	7	7	—
Cerebral malaria	3	2	1
Spontaneous hypoglycaemia	2	1	1
Tuberculous meningitis	1	1	—
Poisoning	2	1	1
<b>Total</b>	<b>121</b>	<b>104</b>	<b>17</b>

*Hepatic Failure*

This constituted by far the most common cause of coma, there being 43 cases (27 due to cirrhosis, 11 to carcinoma of the liver and five of undetermined liver failure). All the patients with primary carcinoma of the liver were male. Hepatic failure is generally not difficult to recognise. The extent of the encephalopathy varies but usually there is a confusional state of drowsiness, stupor or not necessarily actual coma. A flapping tremor may be elicited before the actual state of coma develops. A number of the patients are jaundiced although this sign need not be present. The liver is often palpable and is hard and irregular; the spleen, if enlarged, would support a suspicion of hepatic coma. An ascites is commonly present and also an enlarged vein coursing across the abdomen. Another sign of some value, if present, is the foetor hepaticus.

*Diabetes mellitus*

There were 14 patients presenting with diabetic coma, of whom nine were males; of the males, two were under 20 years of age and seven between 21 and 59 years. Diabetic coma presents the usual features. In the precoma stage an increasing lethargy on the part of the patient or abdominal pains and obstinate constipation may be expected. Later comes a stage of mental confusion and inability to effectively discharge ones duties, a drowsy state and finally the onset of coma with acidotic breathing. The skin is dry, signs of dehydration are evident and acetone can usually be detected in the breath.

*Epilepsy*

Ten cases were diagnosed as having epilepsy; nine were male and one female (in one of the males no age was mentioned, one was under 20 years, seven between 21 and 59 years and one was a female of 14 years of age). Epilepsy too presents with similar features to those elsewhere. It is perhaps striking that biting of the tongue occurs less often than emptying of the bladder and that at times Todd's paralysis is present. Africans living in their traditional environment not uncommonly fall into fires and so awful scars of old burns are evident.

*Uraemia*

Of 10 patients with uraemia eight were male and two female (seven of the males were between 21 and 59 years and in one male the age was not recorded; the two females were between the ages of 21 and 59 years). Uraemia can be recognised as a rule, although mistakes are made when it is overlooked for some other cause such as asthma or stridor on account of the altered breathing. Quite a large number of these cases develop bleeding gums, uraemic frost, a pericardial fric-

tion rub, tetaniform contractions or epilepsy and a severe normocytic normochromic anaemia.

*Alcohol*

Of the seven cases diagnosed as being in alcoholic coma all were male; six were between the ages of 21 and 59 years and in one the age was not stated. From time to time an individual takes an excessive amount of alcohol and passes into coma. Usually a history is available from the person who brings the patient to hospital and the breath generally smells of drink. However, one should remember that a patient may have been drinking and yet the cause of coma may be due to another reason, such as diabetes, head injury, and so on.

*Insulin Coma*

Of the seven cases all were male (two were under 20 and five were between 21 and 59 years of age). In my wards, hypoglycaemia from an overdose of insulin is by no means as rare as I have met in European practice, probably because, at times, the African does not understand the danger of not measuring the precise amount in the syringe or at other times gives himself the insulin without having had his food.

*Carbon Monoxide*

There were seven cases due to carbon monoxide poisoning. These occurred only in the male and in the cold season of the year from June to July. All the subjects were between the ages of 21 and 59 years of age. The risk of the coal fire is known to the medical profession, for every winter when the cold becomes bitter the urban African shuts himself up in his room with a fire to keep him warm and goes to sleep there. No fresh air is allowed to enter and so his blood becomes oxidised to carboxyhaemoglobin.

*Intracranial Vascular Accident or Haemorrhage*

Of the nine cases attributed to intracranial bleeding, all were males; two were below 20 years of age, the rest between 21 and 59 years. Hypertension and hemiplegia were found in two of the cases; seven had subarachnoid bleeding. In one case a subdural haematoma was the cause of the coma. In this group there may be signs of cerebral damage, such as hemiplegia, although in certain instances, as in subdural haematoma for example, these are often absent. The heart, or less often the lungs, may be the source of an embolism and there may be hypertension.

*Acute Meningitis*

Six cases of acute meningitis with coma were seen — four males and two females. (The ages of three males between 21 and 59 years and one male was 60 years old; the two females were aged between 21 and 59 years.)

*Spontaneous Hypoglycaemia*

Two cases of spontaneous hypoglycaemia were encountered, one male and the other female. Both were between the ages of 21 and 59 years. Spontaneous hypoglycaemia with resultant coma is well recognised in Africans and appears often to follow heavy drinking bouts lasting a few days or more. The blood sugar is very low, usually under 30 mg per cent. and there is often mental confusion and even disturbed behaviour before the onset of the coma. One can expect the response to intravenous glucose to be almost immediate.

*Cerebral Malaria*

Three cases (two male and one female) of cerebral malaria were seen. One of the males was 14 years old and the others between 21 and 59 years of age. One case of tuberculous meningitis — a male, aged 46 years — was encountered.

*Poisoning*

Two cases of poisoning were listed. One was attributed to poisoning by mushrooms (a female aged nine years) and the other (a male of 30 years) by a chemical (but unidentifiable) poison.

There were 13 cases in whom the cause of the coma could not be determined. In four an autopsy was conducted but the reason for the comatose state could not be given. In two, poisoning was considered possible, one of the deceased being a heavy drinker. One, it was considered, might have had an epileptic attack and in another there was a fever with a splenomegaly. In one patient hysteria could have been the primary reason for the state of coma.

## COMMENT

The prospective study shows that there is the same wide scatter of causes of coma as would be experienced anywhere else, but the frequency of particular local diseases is responsible for a different pattern. Thus the frequency with which chronic liver disease is encountered in the African of Central Africa would produce a bias towards an increase in the number of hepatic coma. Similarly, since urinary bilharziasis is so often encountered, it follows that a certain number will develop renal failure. The rural African's custom of having a fire in his hut at night has become a habit in the urban areas, especially on cold nights. Coal fires are prepared in rooms completely sealed off from outside, resulting in a few deaths each year from carbon monoxide poisoning.

Diabetic acidosis (precoma or the actual state of coma) is not uncommon in this hospital (but this figure may be more than in other practices because Harare is a large central hospital where seriously ill patients are often referred, so certain disorders seem to be found in a greater incidence

than an individual doctor may encounter in his own practice). Of the so called tropical conditions responsible for the state of coma, three cases of cerebral malaria were encountered — not a very high figure for a country in which falciparum malaria is still present in significant frequency in certain areas. One of the patients was a male aged 14 years but the other two were adults.

Spontaneous hypoglycaemia is another cause of coma which has to be remembered. It is probably more common than is recorded in this series. The diagnosis is made by finding a very low blood sugar on admission. (The use of dextrostix is a useful, simple and quick way of doing this estimation and furthermore there is a dramatic response to the administration of glucose intravenously.) At time the disorder is related to a previous drinking bout a few days or so before (Gelfand, 1963), but in our experience, it may develop without any apparent exciting cause.

In a country where African medicines (some of which are known to be highly dangerous) are popular and where the trial by ordeal is well known, one can expect a number of comatose states, even with the supervision of death, from poisons. It is difficult to identify or even establish that such a poison was given or taken. Many years of experience with medico-legal work have shown how seldom one of these poisons has been proved responsible for unexplained deaths, even when the poison was identified. We know from recent papers by Dukes *et al.* (1969) and Baker of Bulawayo how important this subject can be in a population which still has much faith in its herbalists and diviners. One therefore can expect this cause of coma for many years.

## SUMMARY

By far the most common cause of coma in Africans admitted to Harare Hospital was the metabolic group of diseases (hepatic encephalopathy, diabetes mellitus and uraemia). In this group hepatic failure was far more common than diabetes or renal failure.

Unusual conditions included carbon monoxide poisoning during the cold months of the year and spontaneous hypoglycaemia.

Cerebral malaria was encountered relatively uncommonly in this series.

There was a fairly large number of cases in which the cause was not adequately determined and it was not possible to estimate the extent to which African poisons were responsible.

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