5 and 20 minutes after the first delivery. Version and extraction would therefore seem safer than difficult forceps, provided that the manoeuvre is carried out within these time limits. Donald (1961, personal communication) suggests that the application of the ventouse might prove the best solution of all for such cases. The importance of having an anaesthetist and an obstetrician present at every twin delivery is obvious.

Conclusions

The solution to the problem of whether the second twin is at greater risk than the first lies in appreciating that, apart from prematurity, the risks in labour for each twin are quite different. The second twin is in fact at much greater risk, but mortality can be reduced considerably by skilful obstetric management at delivery.

The first twin is more susceptible to cord prolapse because of incomplete dilatation of the cervix, and may suffer cerebral damage in dilating the birth canal. The second is at considerable risk from reduction of placental oxygenation and has a much higher breech and operative delivery rate; it may therefore succumb at birth or in the neonatal period from asphyxia, trauma, or both.

As previous writers have also suggested, prematurity could be reduced by rest from the 30th week or even earlier to the 36th week. This presupposes efficient antenatal care with early diagnosis. Hospital admission would be indicated particularly in primigravid patients and where there were early signs of hydramnios, pre-eclampsia, anaemia, or effacement of the cervix. Total twin mortality can therefore be reduced by the prevention of prematurity, allied with efficient antenatal care.

Twin labour should always be conducted in hospital, where there are special paediatric facilities, and the delivery attended by an anaesthetist and an experienced obstetrician. Gentleness and skill in handling the babies will reduce mortality.

Early rupture of the second sac is not followed by inertia. Indeed, spontaneous delivery is more likely and the risk of complications is reduced.

Immediately after the birth of the first child the lie of the second should be corrected to longitudinal, and five minutes after the first delivery the second presenting part should be pushed into the brim and the forewaters ruptured. If spontaneous delivery does not occur in a further 10 minutes, or if there is any complication, operative delivery is indicated. Delivery should thus be complete within 20 minutes of the birth of the first child.

Summary

A series of 500 consecutive twin deliveries has been studied to define the particular risk facing the second twin.

Prematurity is the major cause of foetal loss, and could be reduced by rest from 30 weeks or earlier to 36 weeks. Particular indications for hospital admission are discussed.

The second twin is at greater risk from asphyxia and trauma, but anaesthetic and skilled obstetric assistance at delivery will reduce mortality.

Early controlled delivery of the second twin is advocated, with membrane rupture at five minutes and delivery complete within 20 minutes.

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SIDEROSIS IN THE BANTU

A COMPARISON OF INCIDENCE IN MALES AND FEMALES

BY

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The diet of the Bantu in South Africa contains large amounts of iron, most of which is derived from the containers used in the preparation of alcoholic drinks (Walker and Arvidsson, 1953). Although other as yet unidentified factors may be involved, this high iron intake is almost certainly the primary cause of the varying degrees of iron overload so common in adult Bantu. Recent evidence suggests that such iron deposits may have deleterious effects. For example, there is a close correlation between severe hepatic siderosis and portal fibrosis (Higginson *et al.*, 1957; Gillman *et al.*, 1958), and this is especially so with iron concentrations above 2% dry weight (Bothwell and Bradlow, 1960). In addition a small proportion of subjects exhibit clinical and pathological features virtually indistinguishable from those found in idiopathic haemochromatosis (Seftel *et al.*, 1960, 1961; Isaacson *et al.*, 1961).

The present investigation was undertaken to define in more detail the extent of the problem in the Johannesburg area. This was done by estimating chemically the concentration of iron in the livers of several hundred male and female Bantu adults dying in hospital. The results in the two sexes were then correlated with the histological findings.

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Methods

Liver specimens were examined from 318 males and 265 females dying in hospital over a two-year period. Aliquots were dry-ashed and the iron concentrations were estimated as described previously (Bothwell and Bradlow, 1960). Results were expressed as %/100 g. dry weight. In addition, sections were stained for connective tissue by Masson's method and for reticulum by the Gordon and Sweet silver impregnation technique. These were then examined for the presence of portal fibrosis or portal cirrhosis. Portal fibrosis was recorded as absent, as + (slight thickening of the portal tracts), as ++ (moderate thickening of the portal tracts), or as +++ (marked thickening of the portal tracts, with early linkage of adjacent tracts in some areas but without distortion of the architectural pattern). Portal cirrhosis was regarded as being present only when there was a marked increase in portal fibrosis with linkage of adjacent portal tracts, distortion of the lobular pattern, and areas of nodular hyperplasia.

Results

Iron Concentrations in Liver Specimens (see Fig.).—Of the males, only 29.6% had iron concentration within

Hepatic iron concentrations in males (black columns) and females (cross-hatched columns) at various ages.

the normal range (0.01 to 0.09%) or just above this range (0.09 to 0.19%), while 37.4% had severe siderosis (>1%). The degree of involvement tended to increase with age. For example, only 18.8% of subjects between the ages of 20 and 39 years had severe siderosis as compared with an incidence of 50% of those over the age of 40. The findings in females were far less striking, and 75.4% had hepatic iron concentrations within or just above the normal range. Although there was some tendency for concentrations to rise with age, this was not marked and severe siderosis was present in only 11.6% of cases.

Relationship Between Hepatic Siderosis and Portal Fibrosis.—The incidence of portal fibrosis and portal cirrhosis in the different groups is shown in the Table. In this comparison portal fibrosis was regarded as significant only when moderate or severe (++ or +++).

In males having hepatic iron concentration within or close to the normal range portal fibrosis was very uncommon at all age-groups. With higher concentrations the incidence increased, and in the 66 subjects with concentrations above 2% portal fibrosis was present in 59% and portal cirrhosis in 16.6%. In females a similar trend was noted but the results were less striking, since most of the subjects had iron concentrations which were within or just above the normal range. In this group of 200 subjects portal fibrosis was found in 7% and portal cirrhosis in 2.5%. On the other hand, in the 19 subjects with concentrations of 2% or more, 12 showed portal fibrosis and two had portal cirrhosis.

Discussion

The findings in adult male Bantu dying in hospital are very similar to those obtained in a previous investigation in Johannesburg on Bantu males dying from acute traumatism (Bothwell and Bradlow, 1960). The incidence of hepatic siderosis in both studies was extremely high and the severity tended to increase with age up to the forties. When the iron concentrations obtained in the present study were related to liver weight it was calculated that 53 subjects had between 5 and 10 g. in the liver and a further 35 had more than 10 g. Although there is no valid way of estimating the total body content in these subjects, it is probable that such figures are not very much higher, since iron is confined to the liver and reticuloendothelial system in the majority of subjects (Higginson *et al.*, 1953). It therefore seems unlikely that the total body content often exceeds 15 g. It should be noted that the disorder in iron balance necessary to produce this degree of iron overload is not a large one. An average absorption of 2 mg. daily between the ages of 20 and 50 would lead

Incidence of Portal Fibrosis and Portal Cirrhosis in Subjects with Different Iron Concentrations in the Liver

Iron Concentration (% Dry Weight)	Age-Group											
	20-29			30-39			40-49			50-59		
	No.	P.F.	P.C.	No.	P.F.	P.C.	No.	P.F.	P.C.	No.	P.F.	P.C.
<i>Males</i>												
0.01-0.19	28	2	0	22	3	0	21	3	0	14	1	0
0.20-0.49	13	0	0	24	1	0	15	1	0	3	1	0
0.50-0.99	8	1	0	17	4	0	36	12	0	22	1	2
2 +	4	3	1	12	7	5	23	13	2	6	4	0
<i>Females</i>												
0.01-0.19	48	0	0	46	4	1	42	3	3	35	1	0
0.20-0.49	2	0	0	5	3	0	8	1	1	3	0	0
0.50-0.99	2	0	0	5	0	1	6	1	1	3	1	0
2 +	3	0	0	4	4	0	4	4	0	2	2	0

P.F. = Moderate or severe portal fibrosis.

P.C. = Portal cirrhosis.

to a positive balance of approximately 1.4 mg. daily in the male, which is quite enough to account for deposits of this magnitude.

In females the findings were very different, since about 75% had iron concentrations in the liver which were normal or very close to normal, and although severe siderosis did occur it was uncommon. Of the whole group, nine had between 5 and 10 g. in the liver while only two had more than 10 g. The much lower incidence of iron overload is possibly explicable on the greater physiological losses which occur in females. It has been calculated that the average female loses up to 10 g. of iron through menstruation, pregnancies, and lactation during the reproductive period of life (Finch and Finch, 1955). On this basis it might be anticipated that the incidence and severity of iron overload would be less in females. Whether this is the only factor is, however, open to question. There is good evidence that the major source of iron in the Bantu diet is "kaffir beer" (Walker and Arvidsson, 1953), and females, on the whole, tend to drink less of this than do males. It is thus probable that the majority ingest less iron than do males.

The well-marked association between severe hepatic siderosis and significant portal fibrosis or actual portal cirrhosis, which has been noted in previous studies, was confirmed in the present investigation. This association was most striking with iron concentrations above 2% dry weight. The frequency with which such pathological changes develop in the siderotic liver suggests that they are the direct result of the iron deposits. However, it is perhaps noteworthy that 10 of the 35 subjects who were over the age of 50 and who had iron concentrations above 2% dry weight showed no significant portal fibrosis. Discrepancies such as this underline the complexity of the problem and suggest that other as yet unidentified factors may be involved. It has been shown experimentally that the liver overloaded with iron is very vulnerable to toxic, nutritional, and metabolic hazards (Golberg and Smith, 1960), and it is possible that such factors may also potentiate the effects of iron deposits in the Bantu.

Whatever the exact relationship between iron overload and hepatic fibrosis there is no doubt that a proportion of subjects end up with histological findings in the liver which are indistinguishable from those in idiopathic haemochromatosis. The results of a previous study indicate that cases with severe siderosis and portal cirrhosis invariably have significant epithelial deposits elsewhere in the body (Isaacson *et al.*, 1961). These are particularly striking in the pancreas, and over 20% of such subjects have diabetes. It is therefore apparent that some Bantu do eventually develop both clinical and pathological findings very similar to those in idiopathic haemochromatosis. If those cases showing hepatic siderosis together with portal cirrhosis in the present study are regarded as examples of this entity, then the incidence of full-blown haemochromatosis in Bantu subjects coming to necropsy in Johannesburg is approximately 4% in males and 2% in females.

Summary

The concentration of iron in the livers of 318 Bantu males and 265 Bantu females dying in a Johannesburg hospital were estimated chemically. Of the Bantu males, 70% had significant hepatic siderosis, and in half of these subjects it was severe. In contrast 75% of

females had iron concentrations in the liver which were within or just above the normal range.

Portal fibrosis or portal cirrhosis was present in the majority of subjects with hepatic iron concentrations above 2% dry weight. The fact that this was not invariably so suggests that there are other factors which potentiate the fibrogenic effects of excessive iron deposits.

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INCIDENCE OF GENERAL PARALYSIS OF THE INSANE

BY

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In the decade 1940–9 the V.D. clinics of England and Wales diagnosed early syphilis in 100,079 individuals (Ministry of Health, 1960). With only a few exceptions these were civilian patients, and if Service cases and undiagnosed infections are added a huge potential pool for later neurosyphilis was thus created. The usual difficulties in persuading patients to undergo complete treatment with the long courses of arsenical and bismuth injections were intensified by wartime exigencies and the epidemics of hepatitis. The increasing use of penicillin from 1944 introduced new problems; initial shortage of supply, varying composition of the penicillin available, and the uncertainty of what constituted adequate treatment all contributed to the anxieties of venereologists. They were fully alive to the danger that subcurative treatment of early cases might be followed by neurosyphilis (Pick, 1946).

Harris (1958) and Mayer-Gross (1958) suggested that an increased incidence of taboparesis might be imminent. Steel (1960) and Goody, Gautier-Smith, and Dunkley (1960) reported that 18 cases of general paralysis of the insane (G.P.I.) had been admitted to a psychiatric observation ward in London between April, 1957, and September, 1958. Bockner and Coltart (1961) diagnosed nine cases of G.P.I. out of 447 patients admitted in 1959 to another psychiatric observation ward in London and suggested that the incidence of G.P.I. was increasing owing to syphilitic infections