TREATMENT OF THE CONCEALED ACCIDENTAL HAEMORRHAGE OF PREGNANCY

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The object of this paper is to compare the results of different treatments used for the severe or "concealed" form of accidental haemorrhage of pregnancy; the observations on which it is based were made in the Peninsula Maternity and Groote Schuur Hospitals, Capetown.

Incidence

Before discussing the main topic it is interesting to record the incidence of accidental haemorrhage and to note its relation to the incidence of eclampsia.

Accidental haemorrhage (all cases) accounted for 2% of all admissions to the above hospitals; and the severe or concealed variety for 0.7%. This incidence is considerably in excess of that reported by workers in other centres (Table I). For instance, at the Queen Victoria Hospital,

TABLE I.—Incidence of Accidental Haemorrhage with Attendant Maternal and Foetal Mortality

Author	No. of Cases	Incidence %	Maternal Mortality %	Foetal Mortality %
Baird (1936) ..	1,160	0.4	4.8	—
Bland and Rakoff (1938) ..	2,319	0.93	6.0	70.0
Brodhead (1927) ..	34	1.1	8.6	61.5
Cosgrove and Conway (1941) ..	236	0.7	—	—
Crichton (all cases) ..	388	2.0	4.4	75.0
Crichton (concealed only) ..	120	0.7	10.9	100.0
FitzGibbon (1926) ..	115	0.2	9.5	—
Goethals (1928) ..	128	1.06	8.6	61.5
Gustafson (1945) ..	54	0.3	0.0	58.6
Harrar (1932) ..	254	0.25	7.5	72.5
Kraul (1937) ..	27	0.2	7.4	62.9
O'Regan (1943) ..	93	0.3	3.2	5.2
Polak (1931) ..	16	1.3	6.2	87.5
Van Wyck (1943) ..	114	1.0	3.2	50.0
Watkins (1941) ..	30	0.2	4.1	67.0
Williams (1925) ..	57	0.63	7.5	72.5

Johannesburg, where the selection of admissions is comparable, the corresponding figure for concealed accidental haemorrhage is 0.04%. It is interesting to find that a similar disparity also exists with regard to eclampsia admissions, which amount to 1.8% in the former institution and 0.3% in the latter. The altered incidence of both conditions supports the view that accidental haemorrhage and eclampsia are in some way related and perhaps have a common aetiology. Cases of ante-partum haemorrhage occurring at the Peninsula Maternity Hospital are classified in Table II.

TABLE II.—Ante-partum Haemorrhage at the Peninsula Maternity Hospital

Cause	No. of Cases	%
Haemorrhage of unexplained origin ..	204	1.1
Accidental haemorrhage ..	388	2.0
Concealed accidental haemorrhage ..	120	0.6
Placenta praevia ..	325	1.6

In some previous reports haemorrhage of unexplained origin has been misleadingly classed as accidental haemorrhage.

Analysis of 120 Cases

For the purpose of the present analysis 268 of the series of 388 cases of accidental haemorrhage were discarded because they were not of the severe concealed variety and

their inclusion would have impaired evaluation of the merits of different forms of treatment.

The severe shock manifested in the remaining 120 cases was not due to revealed blood loss. In only six was the systolic blood pressure above 90 mm. Hg, and these patients were subsequently shown to be markedly hypertensive.

The average age of the 120 patients was 35.8 years. Multiparae numbered 109 (90.9%). The average parity was 5.5 and the gravidity 6.3, which excludes a high rate of previous abortion among these cases.

Albuminuria and/or hypertension (a systolic pressure above 140 and diastolic pressure above 90 mm. Hg) were found to be present in 95% of cases, and three of these were associated with eclampsia. This incidence of toxæmia is high, and is approximated only in Couvelaire's clinic, where 91.3% of cases were reported to have toxæmia.

The clinical observation of a relatively slow pulse rate, considering the gravity of the patient's condition, was originally mentioned by Gibberd (1948) and was substantiated in almost 80% of the present series of cases, although a tachycardia later developed in those not responding to treatment.

TABLE III.—Details of the 13 Fatal Cases

Age	Maturity (Weeks)	Clinical Features	Cause of Death
40	36	Conservative treatment of shock and associated eclampsia. Blood transfusion given. Died on 9th day	Bilateral renal cortical necrosis. Necropsy
21	28	Conservative treatment of shock and associated eclampsia. No blood transfusion. Died undelivered	Shock and eclampsia; ? associated cerebral haemorrhage. No necropsy
41	40	Conservative treatment of shock. No blood transfusion. Low forceps delivery	Haemorrhage after delivery of placenta
39	39	Conservative treatment of shock. No blood transfusion	Haemorrhage after delivery of placenta
30	38	Conservative treatment of shock. Blood transfusion. Treatment of severe urinary suppression, which was improving when death supervened	Pulmonary embolism with evidence of regenerating bilateral renal cortical necrosis. Necropsy
36	40	Conservative treatment of shock. Blood transfusion. Died undelivered	Shock and gross malnutrition. Necropsy
40	34	Conservative treatment of shock. Blood transfusion. Severe urinary suppression	Bilateral renal cortical necrosis. Necropsy
42	39	No treatment of shock. No blood transfusion. Artificial rupture of the membranes in the presence of contractions. Precipitate labour	Shock and haemorrhage after delivery of placenta
25	32	Shock therapy, blood transfusion, pituitary injections, tight binder. Membranes punctured in absence of contractions. Increased shock	Haemorrhage after delivery of placenta. Shock
37	38	Shock therapy, blood transfusion. Artificial rupture of the membranes in absence of contractions. Increased shock, caesarean section	Bilateral renal cortical necrosis. Necropsy
38	38	Shock therapy, blood transfusion, oxytocin injections, abdominal binder. Membranes artificially ruptured in absence of contractions. Further deterioration in condition. Caesarean hysterectomy	Shock and haemorrhage
35	35	Shock therapy, blood transfusion, pituitary injections, abdominal binder. Artificial rupture of membranes in absence of contractions. Died undelivered after three hours	Shock and further concealed haemorrhage
39	40	Shock therapy, no blood transfusion, pituitary injections, abdominal binder. Vaginal plugging removed; membranes artificially ruptured in absence of contractions. Died undelivered after six hours	" "

As was to be expected from the type of case dealt with, the foetus invariably died—usually before the institution of treatment. The maternal mortality was 10.9% (13 cases). Details of the fatal cases are given in Table III. The forms of treatment used will now be discussed in detail.

Treatment

Shock.—In 115 cases in which the treatment of shock preceded any other form of treatment there was partial

recovery from shock in all but two instances in which the patients died within a few hours. The partial recovery was usually maintained, but in a small number of cases the clinical condition again deteriorated despite treatment, or perhaps because of it. Shock was treated by keeping the patient moderately warm in bed, by morphine injections, and by intravenous glucose-saline solution. The blood was grouped and haemoglobin estimated, but the latter reading was considered in conjunction with the clinical assessment of the anaemia because of the incongruous readings that were often obtained. Blood transfusion was not employed *per primam*, and special importance was attached to cross-typing in these patients. The results of more extensive use of blood transfusion in recent years are interesting. Before 1939 only 12.5% of patients with concealed accidental haemorrhage received blood transfusion; since that date the proportion has been 77.7%. Despite this increased use of transfusion there was no substantial difference in maternal mortality in the two series.

Shock followed by Simple Rupture of the Membranes when Contractions Supervened.—In this group the treatment was conservative; particular importance was attached to half-hourly pulse records, to haemoglobin and blood-pressure readings, and to measurement of the girth of the abdomen and height of the fundus uteri. The detection of uterine contractions or onset of vaginal bleeding was regarded as an important guide both in prognosis and in treatment. Of the 120 cases, 88 (73%) were treated by this method; among these, seven patients (8%) died.

Necropsy on three of the patients who died revealed evidence of long-standing renal disease upon which bilateral renal cortical necrosis had been superimposed. Two of the deaths were due to haemorrhage occurring after delivery of the placenta and one to pulmonary embolism on the ninth day. Two of the patients died undelivered—one with supervening eclampsia, the other with gross malnutrition. Neither patient responded to treatment of shock, and in both the condition deteriorated progressively until death occurred before delivery.

In 32 of the 88 cases the membranes were artificially ruptured in the presence of definite uterine contractions. The average admission-delivery time in these cases was almost five hours less than that in the remainder. Two maternal deaths occurred, both from haemorrhage after delivery of the placenta: in each case delivery had been precipitate following puncture of the membranes.

Initial conservative treatment was followed by caesarean section in four cases—an incidence of 4.5%. Contractions failed to supervene in these patients, and the clinical condition deteriorated after an initial response to shock treatment. All four patients survived.

Shock followed by Artificial Rupture of the Membranes, Application of Willett's Forceps or Vulsellum to the Scalp, and a Tight Abdominal Binder.—This treatment was employed on four occasions without maternal mortality. In one patient external bleeding ceased but shock increased; the abdomen enlarged, became more tender, and contractions ceased. The vulsellum slipped off at an early stage, but the patient made a slow recovery with blood transfusion, delivering herself spontaneously 12 hours later. The same complication occurred in the fourth case, but the patient's condition did not respond to conservative measures and 10 hours later caesarean hysterectomy was performed. This procedure has been condemned by many writers, including O'Regan (1943), whose findings were similar to these.

Artificial Rupture of the Membranes in the Presence of Definite Contractions without Preliminary Treatment of Shock.—This was performed on five occasions and one death occurred. In the fatal case delivery occurred 45 minutes after puncture of the membranes, but a mild haemorrhage following the birth of the placenta was sufficient to kill the patient, who was already in a critical condition. Another patient almost died from increased shock when a precipitate delivery followed artificial rupture of the membranes. Although this group of cases is small and therefore unsuitable for statistical analysis, the results are not encouraging, and from the mere fact that this treatment is contrary to a golden rule of surgery it should be regarded with suspicion. Berkeley, Bonney, and MacLeod (1938) censured the procedure in these terms: "A patient obviously suffering from shock should not be subjected to an operation except in a desperate attempt to save life."

Shock followed by Artificial Rupture of the Membranes in the Absence of Contractions.—Twenty-three patients were included in this group. Treatment for shock was instituted, and injections of "pituitrin," or, more recently, "pitocin" (oxytocin), were given before and after puncture of the membranes. A tight abdominal binder was applied. The maternal mortality was 21.8%; in the five patients who died artificial rupture of the membranes had been followed by a pronounced increase in the degree of shock. The first two patients died undelivered. Haemorrhage after delivery of the placenta caused the death of the third patient, who was already in a critical condition. Deterioration in the general condition following puncture of the membranes was taken as an indication for caesarean section in the last two patients, one of whom died within 24 hours and the other on the ninth day. Of the 18 patients who survived, five suffered a marked increase in shock within an hour or two following puncture of the membranes, but rallied with the aid of copious blood transfusion.

The enormous quantity of retroplacental clot which escaped after delivery of the foetus in these patients bears out the supposition that further intrauterine bleeding is likely to occur after artificial rupture of the membranes in the absence of definite uterine contractions.

It must be emphasized that it is often most difficult to decide whether or not the uterus is contracting. In many instances contractions are noted only when the patient is approaching the second stage, and labour is mistakenly regarded as precipitate. Even by means of tocographic tracings Murphy (1942) was sometimes unable to detect uterine contractions in patients with concealed accidental haemorrhage in whom cervical dilatation was proceeding. The clinical diagnosis of labour by actual uterine palpation is less reliable in these cases than observation of the general reactions of the patient or the results of vaginal or rectal examinations. A sero-sanguineous vaginal loss is often the precursor of detectable contractions.

Vaginal Plugging.—This treatment was not employed, but four patients were admitted with the vagina plugged with a few feet of loosely packed gauze. Hastings Tweedy, the great advocate of this method of treatment, emphasized the importance of tightness when packing the vagina, and recommended the use of pledgets of cotton-wool. As generally employed, vaginal packing fails to reach this standard of tightness.

Shock followed by Caesarean Section or Caesarean Hysterectomy.—Two patients died following an abdominal operation performed for progressive deterioration of the condition after artificial rupture of the membranes in the absence of uterine contractions. One of these was a

case of caesarean hysterectomy. Among the five cases that survived, one caesarean hysterectomy was performed following application of a vulsellum to the scalp. In the remaining four, caesarean section was performed 12 to 24 hours after the institution of conservative treatment. The indication for the operation was the continued absence of contractions and progressive deterioration in the patient's condition.

Discussion and Deduction from the Results of Treatment

Regarding treatment, Gibberd (1948) says: "When the aetiology of a condition is obscure the treatment is often prejudiced if an aetiological approach is attempted." Now, in most medical centres, cases of concealed accidental haemorrhage are not common enough to enable individual workers to obtain extensive personal experience of treatment. Misleading impressions are then apt to be formed, particularly if records are compiled which include mild cases of haemorrhage—cases which, in the words of the late Sir William Smyly, "are of little moment," and which respond well, little matter how treated. The masking of the severe by the mild case has had the unfortunate consequence of deflecting attention from the special treatment required by the severe case—the mortality of which, according to Greenhill (1947) may be as high as 25%. It is therefore of the highest importance to consider the two conditions separately.

In concealed accidental haemorrhage shock gains a ready hold, because the majority of cases occur in the hypertensive toxæmia group of patients, who are known to be particularly susceptible to shock. The advisability of treating shock before performing any other treatment is indicated on general surgical principles, and this belief is strengthened by the results in the present series of cases.

Initial treatment of shock was by means of intravenous glucose-saline solution, usually followed by blood transfusion. The quantity of blood transfused was in accordance with an estimate of the blood which had been lost. Scott (1947) drew attention to the difficulty of assessing the amount of circulating blood which had been lost, and I have come to regard over-estimation of the requirement as a common mistake.

It has been shown earlier that blood transfusion has produced no obvious reduction in maternal mortality in concealed accidental haemorrhage. These findings are in accordance with those of Sheehan (1942), who analysed the results of blood transfusion at the Glasgow Royal Maternity Hospital. His figures showed that the death rate from haemorrhage complicated by shock was only slightly improved as the result of blood transfusions, but that death from shock with minor haemorrhage, or no haemorrhage at all, remained quite unaffected.

The danger of rupturing the membranes in the absence of contractions was stressed by Gordon Ley (1921), but apart from this publication there has been little mention of the danger of this form of treatment. The advocates of the method hope that oxytocin will ensure subsequent contractions of the uterus. The less severe the accidental haemorrhage the more likely is it that this hope will be realized. On the other hand, the results of the present analysis indicate that the method is likely to fail if employed in the severe case. Rupture of the membranes in the absence of contractions was attended by a maternal mortality of 21.8%; and of the surviving patients about 25% almost died after this method of treatment. This result compares unfavourably with the maternal mortality of 8% obtained in cases treated conservatively.

It would seem that the more severe the case of concealed accidental haemorrhage the more dangerous is it to rupture the membranes in the absence of contractions. Because the converse holds true, and because the converse refers to the common type of case, many authorities have overlooked the potential danger of this line of treatment in severe cases. Gordon Ley (1921) summarized by saying: "Rupture of the membranes is usually fatal and should play no part in the treatment of this condition."

Vaginal plugging has been widely condemned in the literature, so further discussion is superfluous. The increased dangers of sepsis and shock produced by effective vaginal plugging render this treatment obsolete.

The treatment of concealed accidental haemorrhage by means of caesarean section has many advocates. In a series of 49 caesarean sections without maternal mortality Miller (1941) had extended the indication to comparatively mild cases. Falls (1934) and Bland and Rakoff (1938) maintained that surgery is supreme in the treatment of severe cases. Kellogg (1945) found that in his series maternal mortality from abdominal hysterotomy equalled that of vaginal delivery; but half of his death rate among vaginal deliveries was made up of cases of post-partum haemorrhage. Greenhill (1938) criticized the routine employment of caesarean section by quoting a taunt levelled against caesareanists of a previous generation: "They do perceive Gordian (obstetric) knots and, like Alexander, try to cut them." Irving (1938), by substituting conservative for radical measures in his clinic, reduced maternal mortality from 14.5 to 2.9%, a result similar to that of de Snoo (1936). Gibberd (1948) maintained that indications for surgery must be very exceptional, and FitzGibbon (1926) thought that a patient incapable of recovering from collapse was far less capable of recovering from an operation.

The present analysis indicates that the more injudicious the previous treatment has been the more frequent will be the recourse to caesarean section. I believe that caesarean section has a small but definite place in treatment, the indication being the continued absence of uterine contractions and deterioration in the general condition of the patient after a number of hours of conservative treatment.

Although hysterectomy has a maternal mortality about double that of caesarean section (Table IV), this may be

TABLE IV.—*Maternal Mortality Associated with Vaginal Delivery, Caesarean Section, and Caesarean Hysterectomy*

Author	Vaginal Delivery %	Caesarean Section %	Caesarean Hysterectomy %
Bland and Rakoff (1938) ..	4.1	11.2	—
Batzfalvy (1937) ..	—	16.1	35.3
Cosgrove and Conway (1941) ..	5.2	4.0	—
Crichton ..	10.1	20.0	50.0
Davis and McGee (1931) ..	4.1	11.4	—
FitzGibbon (1926) ..	10.7	25.0	66.0
Irving (1938) ..	2.9	14.5	—
Kellogg (1945) ..	15.0	15.0	—
Mahon (1938) ..	—	20.0	60.0
Van Wyck (1943) ..	4.0	10.0	—
Weymeersch and Snoeck (1937) ..	6.6	15.7	28.5

a rare necessity in a case in which the uterus will not contract at the time of operation. Phaneuf (1945) pointed out that in the "Couvelaire" uterus there is usually a non-haemorrhagic half-moon area of muscle situated transversely behind the bladder in an ideal situation for the incision in a transverse lower-segment caesarean section. A vertical incision, and particularly a classical caesarean section, will tend to bleed more, resulting in a higher incidence of caesarean hysterectomy and increased maternal mortality.

Treatment of Complications

The onset of revealed bleeding is a favourable prognostic sign, for it is a precursor of recognizable uterine contractions. The watery blood which escapes at the vulva is not a true haemorrhage, but merely the escape of blood previously retained in the uterine cavity, and attempts to effect haemostasis are not only superfluous but may do harm.

A vaginal examination was performed on almost all cases in the present series, and we agree with Harris (1937), who emphasized the importance of being prepared to proceed with an operative delivery should the diagnosis of concealed accidental haemorrhage prove incorrect. Our incidence of error in diagnosis was 4%.

To a patient who is suffering from shock and anaemia a relatively small post-partum haemorrhage may be fatal, and one-third of the maternal mortality in this series was due to this complication. Antecedent blood transfusion and less procrastination in effecting haemostasis after delivery have prevented maternal mortality from this cause in the past 10 years. I tried the preventive measure of giving intravenous ergometrine at the time of delivery of the anterior shoulder in 18 cases, but still encountered three severe haemorrhages. Greenhill (1947) mentions manual removal of the placenta in the treatment of these cases. The present series, however, was characterized by a very short third stage in which the placenta, already separated from the uterine wall by the pre-existing haematoma, often accompanied the birth of the foetus. Even gentle fundal pressure was seldom required.

The alarming quantity of blood lost at the time of delivery of the placenta was usually merely the escape of pre-existing clots with minimal fresh bleeding. The dangerous haemorrhage which was apt to occur was a steady ooze of rather watery blood after delivery of the placenta. The response to oxytocic drugs and fundal control was often disappointing, and those patients who received a hot intra-uterine douche did not respond satisfactorily. Intrauterine plugging should not be a common necessity, but it proved to be the only effective haemostatic method in four cases. Faber (1945) recommended the routine use of intrauterine plugging as a prophylactic measure, but agreed with Gustafson (1945) that in some cases hysterectomy was the only method of achieving haemostasis.

Bilateral renal cortical necrosis was found in 30% of the necropsies performed in the present series. The incidence of anuria in all cases of concealed accidental haemorrhage was 11.6%. Whereas the treatment of suppression of urinary secretion has made great strides recently, owing to the work of Kolff (1947) and Bull *et al.* (1949), there is no recognized means whereby the incidence of anuria may be reduced in accidental haemorrhage. The excellent analyses of Gordon Ley (1921) and FitzGibbon (1926) make no mention of anuria among their cases. Goethals (1929) and Batizfalvy (1937) encountered an incidence of 4% and 2.8% respectively; and Greenhill (1938) remarked that he had no experience of anuria in ablatio placentae apart from a single instance in which eclampsia coexisted. These findings correspond with my own before 1939, when the incidence of anuria was 4.2%. Since 1939, however, the incidence of anuria was 16.6% in a 10-year period. Young (1949) reported an incidence of 25%, and publications in the past 15 years have devoted much more attention to the complication of anuria in concealed accidental haemorrhage than appeared in the literature before that time. The only aspect of treatment which has altered materially in recent years has been the introduction of intravenous fluids, and

particularly blood transfusion—a fact that may be of some significance.

Kilduffe and DeBaKey (1942) found the mortality of all haemolytic reactions, regardless of the severity, to be 57.7% in 43,284 blood transfusions, and Gibberd (1936) emphasized the care which should be exercised when administering blood in cases of concealed accidental haemorrhage. The mere fact that these patients are usually multiparae of high parity renders them more susceptible to blood-transfusion reactions.

Incompatible blood may be a greater danger if the patient with concealed accidental haemorrhage has pre-existing renal impairment with possible cortico-medullary shunt of the renal circulation superimposed. Sheehan (1947) found that the kidneys of patients who had died with concealed accidental haemorrhage nearly always showed lesions. FitzGibbon (1926) stated that all multiparae with severe accidental haemorrhage had chronic interstitial nephritis, and de Snoo (1936) found evidence of pre-existing renal disease in 16% in an analysis which included milder cases. Renal trouble of long standing was found at 50% of necropsies in the present series.

Duff and Murray (1941) analysed 71 cases of anuria and found that the presence of a few ounces of heavily blood-stained urine (obtained by catheter) was a premonitory sign in all cases. Such patients should be transfused with particular care. Marriott (1947) has stressed the disturbance of electrolyte balance which may result from uncontrolled intravenous therapy, particularly in the presence of urinary suppression, when the additional complication of water overload is a real danger.

Avoidance of unnecessary blood transfusion in cases of concealed accidental haemorrhage is obviously most important, and the findings of Irving (1938) that substitution of conservative for radical treatment in accidental haemorrhage reduced the incidence of blood transfusion from 27.5 to 11.7% is yet another strong argument in favour of conservative treatment. On the other hand, that judicious blood transfusion is of value in selected cases is beyond all doubt. Not only will this aid in the prevention of death from post-partum haemorrhage, but renal function, which is known to be dependent upon a good oxygen supply, will undoubtedly benefit from the correction of a definite anaemia. It follows that it is also a wise precaution to administer continuous oxygen to every case of concealed accidental haemorrhage. High oxygen tension should be regarded as an important safeguard in anaesthesia in these patients should that prove necessary.

Attention to the considerations mentioned may help to reduce the incidence of anuria. Early detection of this complication may permit successful treatment by means of splanchnic block or other methods of relieving arterial or venous spasm; and Bull *et al.* (1949) have stated that even in an established case early efficient treatment would render the mortality from anuria negligible. In concealed accidental haemorrhage, however, such hopes should be tempered by a realization that the exact cause of the condition is unknown and that damage is inflicted on kidneys whose reserves have probably been impaired by preceding disease.

The ultimate prognosis after accidental haemorrhage is not good. Stroink (1934) found that 51% of patients had developed arteriosclerosis, nephritis, or apoplexy in a follow-up extending from two to twenty years. De Snoo (1936) conducted a similar analysis and found 61% to be hypertensive. In more severe cases the prognosis is worse, and the follow-up of these patients is therefore highly important.

Conclusions

The most important aspect of the treatment of concealed accidental haemorrhage is the treatment of shock.

Transfusion of incompatible blood and intravenous injection of uncontrolled quantities of blood and other fluids contribute to the mortality of these patients.

Routine administration of continuous oxygen, avoidance of surgical treatment capable of causing shock, and care with intravenous therapy will reduce the incidence of anuria.

Certain complications, notably post-partum haemorrhage and anuria, should be anticipated, and be promptly treated if they occur.

There is no place in treatment for artificial rupture of the membranes in the absence of contractions, plugging of the vagina, version, dilatation of the cervix, application of vulsellum to the scalp, and other radical procedures.

Artificial rupture of the membranes, even in the presence of contractions, is dangerous without preliminary treatment of shock.

Transverse lower-segment caesarean section has a small but definite place in treatment, the indication being the continued absence of contractions and progressive deterioration of the patient's condition after conservative measures have been given a fair trial.

I wish to thank Professor J. Chassar Moir for assistance in the preparation of this article, and Professor E. C. Crichton for advice in the treatment of the cases described.

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POST-DYSENTERIC COLITIS*

BY

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For many years it has been known that a primary attack of dysentery may be followed by a chronic disorder of the colon. In amoebiasis this disorder is the rule rather than the exception, and it may take the form of periodic dysenteric attacks or simply of chronic diarrhoea. In a much smaller proportion of cases, acute bacillary infections may be followed by chronic dysentery. The diagnosis of one or other of these well-known conditions, however, always depends upon the recovery of the causal organism from the stools or from lesions in the colon, and it is usually inferred that the principal factor in the "colitis" is the persistence of that organism.

The present paper deals with a number of dysenteric and post-dysenteric cases seen by me at the close of the 1939–45 war. In a proportion of these cases disorder of the colon persisted long after the removal of the dysenteric organism. This disorder, which may be termed post-dysenteric colitis (Hurst, 1943), seemed to be of two main types—ulcerative and non-ulcerative. The two types could be clearly differentiated for prognosis, treatment, and eligibility for pension.

The background to this report can be found in the numerous independent studies made during and after the 1939–45 war on the prevalence of dysentery in tropical campaigns, and in particular in papers by Adams (1945), Hargreaves (1946), and Stewart (1947a, 1947b, 1948). The present survey comprised 228 cases of dysentery and diarrhoea admitted to a hospital in Ceylon (Combined Services Hospital, Trincomalee) and 246 cases observed in the Tropical Diseases Centre, Smithdown Road Hospital, Liverpool. Details of the bacteriological and other technical methods employed in the investigation have already been described (Stewart, 1947a, 1948).

Cases Seen in Ceylon

The principal known causes of acute diarrhoea and dysentery in the Trincomalee area of Ceylon are shown in Table I. As might be expected, the majority of the cases

TABLE I.—Dysenteric Disorders in Ceylon* (European and Asiatic Hospital Admissions)

	Actual Numbers	% of Total
Amoebiasis	314	50
Bacillary dysentery	230	37
Flagellate dysentery	69	11
Salmonella infections	14	2

* Excluding helminthic infections, typhoid fever, undiagnosed or symptomatic diarrhoea.

were accounted for by intestinal amoebiasis (50%) and bacillary dysentery (37%). For various reasons it was

*This investigation formed part of a research programme carried out at the Liverpool School of Tropical Medicine for the Colonial Medical Research Committee.