idiopathic type as a subclinical variety of true congenital hypertrophy, and they consider that their concomitant type may also be. The two idiopathic cases they have reported are both females and their concomitant case a male, but in addition they reviewed a total of 160 cases and found that the sex incidence was 130 males to 30 females, an incidence corresponding closely with that of the congenital condition occurring in infancy. The occurrence of one adult and three infantile cases in this family supports the contention that the adult and infantile conditions are in fact one and the same and that a familial incidence does exist.

In the infant, Ramstedt's operation has stood the test of time and is now accepted as the standard procedure. In the adult a variety of procedures have been adopted by different operators, and these include Ramstedt's sphincterotomy, finger dilatation of the pylorus, plastic procedures on the pylorus, gastro-enterostomy, and gastrectomy, either partial or subtotal.

McCann and Dean discuss treatment at some length and favour a Billroth I pyloroplasty. In their second case they performed a pyloroplasty, but symptoms subsequently recurred and a gastro-enterostomy was later carried out at another hospital. In their first case a previous gastro-enterostomy gave relief for only five years, after which Billroth I pyloroplasty was performed by them with complete relief of symptoms. Mor (1947), reporting seven cases in adults, also mentions failure of a gastro-enterostomy after 20 years, when resection had to be done. From time to time difficulty has occurred in distinguishing at operation the pyloric tumour of congenital hypertrophy from a malignant tumour infiltrating the pyloric antrum, and McCann and Dean mention this as an objection to Ramstedt's sphincterotomy. This objection applies equally to pyloroplasty and gastro-enterostomy. Other objections to Ramstedt's sphincterotomy that they mention are the possibility of diverticulum formation and of cicatrix formation with later recurrence of obstruction. I have personal knowledge of two cases in which failure to resect has led to further trouble. The second of these two cases is worthy of mention.

The patient, a man of 53, was first operated on early in 1949. He had a twelve-months gastric history, and carcinoma was suspected. At operation only a hypertrophic pylorus was found. The stomach was opened at that time and thoroughly explored, ulceration and new growth being positively excluded. A biopsy of the pylorus, which included all layers, failed on section to show ulceration or new growth. Subsequently symptoms recurred, and some two years later he was readmitted with haematemesis. While he was in hospital under treatment a prepyloric ulcer perforated, and this was repaired. Three days later further gastric haemorrhage occurred and an emergency gastrectomy was performed. The specimen removed included a pylorus hypertrophied as in the condition of congenital pyloric stenosis, and above it near the lesser curve was an ulcer, 2 in. (5 cm.) in diameter, which was apparently simple. On section, however, this ulcer was found to be malignant, the appearances being consistent with a diagnosis of carcinoma *ex ulcere*. There seems to be no doubt that a resection two years previously would have saved this patient, who died some three months later from his malignant disease.

The object of surgical treatment is to relieve the obstruction, and this is best done by removing it altogether. In Case 1, who had an acidity on the high side of normal, a Billroth I partial gastrectomy was performed, approximately half the stomach being removed. The result is so far satisfactory, and careful questioning has failed to reveal any of the usual symptoms of early "dumping." If the acidity is low Billroth I pyloroplasty as recommended by McCann and Dean would seem to be equally satisfactory in that the lesion is removed and a relatively large stomach remnant left.

Summary

A family with four members who have suffered from hypertrophic pyloric stenosis is reported. The incidence is confined to male members of two generations—one in adult life and three in infancy.

A possible fifth case in this family is mentioned, and the fact that the trait in one of the infants has been passed through a female member of the family is recorded.

Symptoms in the adult case are discussed.

Some aspects of aetiology are mentioned, and in this family the occurrence in adult and infants supports the contention that adult and infantile conditions are one and the same and that a familial incidence does exist.

Surgical treatment in the adult is discussed and a plea made for Billroth I gastrectomy or pyloroplasty.

I am indebted to Dr. J. H. Moseley for permission to publish details of Case 3; to Dr. C. N. Suter, of Gosport, for information on Case 4; to Drs. R. D. Clay and R. H. MacHardy for pathological and x-ray reports; and to Mr. Bernard L. Williams for helpful criticism.

REFERENCES

- Bockus, H. L. (1944). *Gastro-Enterology*, 1, 759. Saunders, Philadelphia.
Cockayne, E. A., and Penrose, L. S. (1943). *Ohio J. Sci.*, 43, 1.
Gailey, A. A. H. (1948). *British Medical Journal*, 1, 100.
Illingworth, C. F. W., and Dick, B. M. (1949). *Textbook of Surgical Pathology*, 6th ed. Churchill, London.
Laubscher, J. H., and Smith, A. M. (1947). *Amer. J. Dis. Child.*, 73, 334.
Maier, R. (1885). *Virchows Arch. path. Anat.*, 102, 413.
McCann, J. C., and Dean, M. A. (1950). *Surg. Gynec. Obstet.*, 90, 535.
Mor, F. (1947). *Minerva chir.*, Torino, 2, 174.
Sauer, L. W. (1924). *Arch. Pediat.*, 41, 145.

POST-PARTUM VENOUS THROMBOSIS AND LEG ULCERS

BY

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Of 557 women, in a series of 804 patients with leg ulcers all examined personally, there were 160 (28.7%) who had suffered from post-partum venous thrombosis of the lower limb. It is only by greater knowledge of its aetiology that we can hope to prevent this condition and the great disability it entails. Here it is intended to consider certain aetiological factors in relation to the present series of patients and to attempt to assess their importance.

When examined the patients were 28 to 80 years of age (the majority being 35 to 60); they were seen at varying periods after the confinements and the thromboses which followed. Information could be obtained only from the history and physical examination, a method more practicable but less accurate than that of following the course of a patient from time of thrombosis to that of ulceration of the leg. Nevertheless, details of the confinements, though not full, seemed essentially accurate. Women usually remember about their abnormal labours.

Obstetrical History

The number of confinements, from 1 to 13, of the women in this series are shown in Table I. Table II shows the number of the first confinement after which there was thrombosis. It occurred after more than one confinement in some women. In nine there were 12 further attacks of venous thrombosis after subsequent confinements.

In order to determine the incidence of venous thrombosis in relation to the number of confinements, the number of thromboses occurring after the first or later confinements is shown in Table III. Thus there are records of 157 first confinements after which venous thrombosis occurred on 78 occasions (50%), but after 123 second and after 96 third confinements the incidence of thrombosis dropped to about

TABLE I.—Number of Confinements

Total No. of Confinements	No. of Women	Total No. of Confinements	No. of Women
1	34	8	4
2	27	9	8
3	26	10	4
4	20	11	1
5	13	12	0
6	13	13	2
7	8		

TABLE II.—Confinement After Which the First Thrombosis Occurred

Confinement	No. of Women	Confinement	No. of Women
1st	78	8th	4
2nd	24	9th	2
3rd	22	10th	1
4th	8	11th	0
5th	8	12th	0
6th	6	13th	1
7th	3	Not known ..	3

TABLE III.—Incidence of Post-partum Thrombosis

Total No. of Confinements	Followed by Thrombosis	
	No.	%
1st—157	78	50.0
2nd—123	28	22.7
3rd—96	24	25.0
4th—71	11	15.5
5th—52	8	15.3
6th—39	6	15.0
7th—26	5	18.4
8th—19	4	
9th—15	2	
10th—7	2	
11th—3	0	
12th—2	0	
13th—2	1	

25%. It fell even more after the fourth, fifth, and sixth confinements. The number of women having more than seven children is too small to warrant conclusions regarding the incidence of thrombosis.

Information about the 172 labours after which venous thrombosis occurred is summarized in Table IV. It will be seen that 46 were normal (26.7%). In a large proportion

TABLE IV.—Details of 172 Confinements Followed by Thrombosis

Normal	46	Premature with toxæmia	3
Forceps	45	Stillbirth	3
Long labour ..	18	Premature	2
Post-partum hæmorrhage	15	Precipitate labour	2
Abortion	6	Caesarean section	1
Twins	6	Version (internal)	1
Retained placenta	5	Puerperal fever ..	1
Ante-partum hæmorrhage	4	? Forceps	2
Toxæmia with stillbirth	4	Details not known	5
Breech presentation	3		

(31.2%) there was some intervention, such as the application of forceps, the treatment of retained placenta, or the delivery of breech presentations. The proportion should be larger, for one and probably more of the patients with ante-partum hæmorrhage were treated by vaginal plugging, and intervention possibly occurred in some of the labours described as long. Of forceps deliveries in this series 68.2% were first confinements. It would seem that infection and hæmorrhage are important factors in the cause of post-partum venous thrombosis.

Chart showing age of patients when thrombosis occurred.

The age of the patient when the thrombosis occurred is of interest and is shown in the Chart. Of the patients, 78.1% were over the age of 25 and 45% over 30 at the time of thrombosis. The Chart also shows the ages of primiparae who suffered from post-partum thrombosis. It does

not suggest that thrombosis occurs more commonly in elderly primiparae, as, although 71.4% were over the age of 25, only 27.2% were over the age of 30.

Other Data

Limbs Affected.—In 65 patients (40.6%) the left leg was affected, in 39 (24.4%) the right, and in 56 (35%) both legs were affected.

Family History.—Details of the family history are shown in Table V. If varicose veins, leg ulcers, or post-partum thrombosis had occurred in parents, aunts, uncles, siblings,

TABLE V.—Family History

Negative	73	Ulcers of the leg ..	37
Positive (no details) ..	9	Post-partum thrombosis	6
Varicose veins	27	Not known	8

or children, the patient's family history was regarded as positive. This was found in 79 (52%) of those whose family history was known, a proportion greater than to be expected from chance (Anning, 1950). It is interesting that in addition to the six relatives shown as suffering from post-partum thrombosis, this condition had also occurred in some of those with leg ulcers. Twelve mothers and five sisters of patients had been affected in this way, a number significantly higher than would be expected by chance.

Body Weight.—Obesity may be a predisposing factor in the production of post-operative thrombosis (Barker *et al.*, 1941), and must be considered here. In this series no record of the body weight at the time of thrombosis is available, but Table VI shows the distribution of body weight among

TABLE VI.—Body Weight

Weight (kg.)	No. of Patients	Weight (kg.)	No. of Patients
40-49	4	90-99	13
50-59	12	100-109	6
60-69	35	110-119	5
70-79	46	Not known	3
80-89	36		

the group at the time of examination. Unfortunately height was not also measured. In 38% of the patients the weight was 80 kg. or more, and may be regarded as overweight.

Period Before Ulceration Occurred.—This must be influenced by a number of factors such as whether elastic support was worn after venous thrombosis, whether ulceration appeared spontaneously or followed injury, and whether secondary varicose veins were injected or ligated. The data shown in Table VII are probably, therefore, of little signifi-

TABLE VII.—Period Before Ulceration Occurred

Years	No. of Patients	Years	No. of Patients
Less than 1 ..	15	21-25	11
1-5	45	26-30	5
6-10	29	31-35	7
11-15	26	36-40	5
16-20	12	Not known	5

cance. However, ulceration had appeared within one year of post-partum thrombosis in 15 patients (9.7%) and in 60 patients (38.7%) within five years. Linton and Hardy (1948) believe that ulceration of the leg does not take place until the thrombotic veins have become recanalized, and that this may take from one to 29 years from the time of venous thrombosis. The appearance of ulceration within one year in almost 10% of the patients in this series suggests that recanalization does not invariably precede ulceration.

Conclusions

The evidence presented here shows that post-partum venous thrombosis occurs more often when labour has been long or difficult and when there has been intervention, especially by intravaginal or intrauterine manoeuvres. Consequently thrombosis is more common after first confinements.

It seems probable that hæmorrhage predisposes to thrombosis. This has been noted by several authors, including Franklin (1951). He points out that as a high proportion

of surgical and obstetrical cases of thrombophlebitis are associated with loss of blood through natural or operational causes or through trauma, such loss of blood, if not corrected, and that quickly, sets in action, to a greater or lesser degree, the differential distribution of the remaining blood volume. The lower limbs, when they are inactive, tend to suffer most from the cuts in blood supply, as Sheehan (1949) found in obstetrical shock.

The risk of post-partum thrombosis is greater in women with a family history of varicose veins, leg ulcers, or venous thrombosis, and inquiries about this should always be made.

An attempt to prevent post-partum thrombosis must take these points into consideration. It is clearly important that special precautions be taken in primigravidae with a positive family history who have difficult labours. Haemorrhage should be treated promptly. Ochsner (1947) has stressed the value of leg exercises to prevent thrombosis in recumbent patients, especially when the limbs have been compressed from toes to groin.

The treatment of venous thrombosis is not considered here, but mention must be made of the importance of firm elastic support of the affected leg in order to prevent chronic oedema and ulceration later. The patients in the present series had not been treated in this way.

Summary

A series of 160 patients suffering from leg ulcers following post-partum venous thrombosis are considered and certain aetiological factors determined. The importance of intravaginal or intrauterine intervention during or after labour and the importance of haemorrhage are stressed. Inquiries about the family history are shown to be useful. It should be possible, by attention to the aetiology of the condition, to do more to prevent it and certainly to foresee when it is likely to occur.

It is a pleasure to acknowledge the kindness of Dr. John T. Ingram, of Dr. F. F. Hellier, and of other colleagues and practitioners who have referred patients to me.

REFERENCES

- Anning, S. T. (1950). *British Medical Journal*, 2, 1305.
Barker, N. W., Nygaard, K. K., Walters, W., and Priestley, J. T. (1941). *Proc. Mayo Clin.*, 16, 1.
Franklin, K. J. (1951). *Proc. roy. Soc. Med.*, 44, 503.
Linton, R. R., and Hardy, I. B., jun. (1948). *Surgery*, 24, 452.
Ochsner, A. (1947). *J. Amer. med. Ass.*, 133, 1275.
Sheehan, H. L. (1949). *Rotunda Hospital Bicentenary*, p. 151. Parkside Press, Dublin.

The sixty-eighth annual general meeting of the Medical Sickness, Annuity, and Life Assurance Society, which limits its business to members of the medical and dental professions, was held on June 16. Mr. R. J. McNeill Love, F.R.C.S., chairman of directors, announced an entirely new policy which the Society is now offering. The Society had always transacted sickness and accident insurance and life assurance, and for the last 20 years had provided family income benefit, but it was now including all these three in a single policy. The personal requirements of the individual could now be met in one policy at a low rate of premium. Mr. Love went on to say that the membership had risen to over 14,000, and the combined funds amounted to over £5,000,000. New life assurance effected during the year amounted to £1,153,243, and the new sickness policies issued reached the record figure of 11,929 guineas. The meeting adopted a recommendation for the payment of an interim bonus on with-profit policies for permanent sickness and accident insurance and life assurances terminating at the stated age or by death in the year ending December 31, 1953, at the interim rates approved in 1951. Much regret was expressed at the resignation of Dr. A. Hope Gosse as the Society's chief medical officer. Dr. T. C. Hunt has been appointed medical officer. Dr. S. P. Meadows and Mr. Bertram Sutton, the retiring directors, were re-elected. A vote of thanks to the chairman was proposed by Sir Cecil Wakeley, and the chairman in response paid a tribute to his co-directors and the staff.

EMERGENCY THORACOTOMY FOR MASSIVE SPONTANEOUS HAEMOPNEUMOTHORAX

BY

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Massive spontaneous haemopneumothorax is a serious complication of spontaneous pneumothorax with an appreciable mortality. According to Cunningham (1950), of 65 cases recorded in the literature 18 have been fatal. Since then Moser (1951) reported another four cases, all successfully treated by thoracentesis; and Hyde and Hyde (1951) reported 12 further recoveries, 11 of which were treated by thoracentesis and one by decortication. In 1951 Myers *et al.* had one patient with massive spontaneous haemopneumothorax who required emergency thoracotomy. Ross (1952) has similarly stated that one of his series of six patients was treated by emergency thoracotomy and ligation of the bleeding-point. Hansen's (1949) case, treated 19 days after onset of bleeding by thoracotomy for continuation of the pneumothorax, was found to have multiple ruptured bullae which could not be sutured. He died 36 hours later. With the following three cases, the present recorded total is now 93, with 19 deaths. The purpose of this paper is to emphasize the serious nature of spontaneous haemopneumothorax, to stress that its onset may be delayed after the onset of the accompanying spontaneous pneumothorax, and to report two cases with massive spontaneous pneumothorax, both of which were successfully treated by emergency thoracotomy. They had evacuation of blood and blood clot from the pleural cavity, control of the bleeding-point, immediate re-expansion of the totally collapsed lung, with rapid recovery and return to normal life. The third patient, seen three weeks after the onset of the haemopneumothorax, required decortication of his lung.

Case 1

A ship steward aged 21 suddenly experienced pain in the right side of his chest while carrying out his duties on the morning of January 12, 1952. He was sent to the Auckland General Hospital, where a chest radiograph was taken two hours after the onset. This showed a small right spontaneous pneumothorax, with a right apical "string" adhesion and a little collapse of the right lung. At first it was thought too trivial a lesion for his admission to hospital; but because of the severity of the pain it was decided to keep him there for 24 hours. During the night his condition rapidly deteriorated, and in the morning he was completely exsanguinated and almost pulseless. The medical registrar realized that the patient had had a severe intrathoracic haemorrhage, which was confirmed by aspirating 3 pints (1.7 litres) of blood from the right pleural cavity. With continuous blood transfusion given through two infusion sets, he slowly improved, and after 7 pints (4 litres) had been given his blood pressure rose to 120/80 mm. Hg. A further chest radiograph showed that the right chest was completely filled with blood. At this stage, with two transfusions still running, the patient was transferred by ambulance to the operating theatre at Green Lane Hospital, where he was admitted at 6.15 p.m.

Operation.—At 6.45 p.m. on January 13, under general anaesthesia (Dr. Lyne), a thoracotomy was performed through the bed of the resected right sixth rib. After opening the right pleural cavity, 4 pints (2.3 litres) of blood