after delivery, although she had been asked to remain under supervision. She was found to have marked splenomegaly, and a screening test on her blood showed a reticulocytosis of 10%. On December 12 the findings were as follows: Hb, 11.6 g.; erythrocytes, 4,576,000; packed cells, 39 vols.%; M.C.V., 85 cubic microns; M.C.H., 25 μ g.; M.C.H.C., 30%; plasma bilirubin, 2 mg. per 100 ml.; reticulocytes, 6.1%. Further investigations on January 13, 1954, included direct and indirect Coombs tests; these were negative. Tests for cold agglutinins, Ham's test, incubation fragility, and the

Osmotic fragility. P.C.V. adjusted to 45 vols. %.

Donath - Landsteiner reaction were negative. The osmotic fragility showed a slight but significant increase (see Chart). At this stage it was found that the patient was pregnant again (L.M.P. on December 19, 1953). The question of splenectomy was left in a

beyance, but laboratory control was maintained. During the first four months of pregnancy the blood count remained reasonably good. The findings at subsequent examinations are summarized in the Table.

Date (1954)	Blood Findings										Therapy
	Gestation (Weeks)	Hb (g./100 ml.)	R.B.C. (mill.)	P.C.V. (Vols.%)	M.C.H.C. (%)	Retic. (%)	Bilirubin (mg./100 ml.)	Marrow	Fragility		
25/5	22	8.7	2.08		37.8	3.4	1.2	Normo.			2 pints (1,140 ml.) whole blood 2 pints (1,140 ml.) packed cells Folic acid started
8/6	24										
15/6	25	4.5	1.26	12	37.5	0.2	0.9				
22/6	26	5.5		15	36.6	1.8		Megalo.			
26/6	26					8.8		Normo.			Haemo-lysis begins 0.5% NaCl
28/6	27	9.6		31	31	4.5					
24/7	31	9.7	3.0			8.0					
30/8	36	10.8	3.6	31	35	4.8	1.2				
4/9	37	11.5	3.3	32	30	8.8					
12/9	Readmitted to hospital										
10/10	Delivered, living infant, pseudohermaphrodite, survived one week										
21/10	12	3.4		34	35	3.6					
11/12	12.4	4.1		33	37	7.0	3.2				

On December 11 there was well-marked microspherocytosis, and a further osmotic fragility test on that day showed haemolysis commencing at 0.58% NaCl, complete at 0.4%. The patient was advised to have a splenectomy, and this was performed on January 24, 1955 (Mr. E. O'Malley). Before operation the direct and indirect Coombs tests were repeated with a variety of test sera with negative results. The sternal marrow showed normoblastic erythropoiesis and the plasma bilirubin pre-operatively was 2.2 mg. per 100 ml. Histopathological examination of the spleen supported the clinical diagnosis. A suspected accessory spleen removed during operation proved to be a regional lymph node in which there was intense haemosiderosis. Recovery was uneventful, and on the patient's discharge from hospital on February 18 her blood count was as follows: Hb, 15.7 g. per 100 ml.; erythrocytes, 5,240,000; packed cells, 47 vols.%; M.C.H.C., 33.6%; leucocytes, 5,120;

reticulocytes, nil; bilirubin, 0.6 mg. per 100 ml.; platelets normal. This improvement in the blood picture was maintained, and in July she became pregnant again.

Her progress was followed with keen interest, but during the entire antenatal period the haemoglobin level did not fall below 13 g. per 100 ml. In February, 1956, there was a transient erythrocytosis. On April 24 she was delivered of a living male infant weighing 6 lb. 2 oz. (2.8 kg.). There was a mild thrombophlebitis in the puerperium which responded well to anticoagulant therapy, and on May 14 she was discharged. At the time of writing she remained well.

The patient has one brother and a sister living. So far, only the sister has presented herself for investigation. No evidence of congenital haemolytic anaemia was found in her blood.

Summary

The case is reported of a patient in whom congenital haemolytic anaemia was twice complicated by megaloblastic anaemia of pregnancy. Following splenectomy a third pregnancy was successfully completed without anaemia being evident at any stage. The rarity with which this combination has been reported is commented upon.

We wish to thank Professor Sir Stanley Davidson for his kindness in examining one of the sternal marrow films from this patient. We acknowledge also the co-operation of the staff of the department of pathology, the Mater Misericordiae Hospital, Dublin, and the technical assistance of Mr. C. J. Conway, pathology department, the National Maternity Hospital, Dublin.

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Medical Memoranda

Subcutaneous Emphysema Occurring After Labour

Subcutaneous emphysema occurring during or immediately after labour is rare (Reckitt, 1922; Charbonnet, 1925). Simmons described the first case in 1784. The majority of cases have occurred in young primigravidae following a prolonged or difficult second stage, and in whom there has been no demonstrable pre-existing pulmonary disease. The mechanism of causation is obscure. The condition has been reproduced experimentally by injection of air through the buccal mucosa (Watson, 1885). It is probable that most cases are due to intrapulmonary alveolar rupture with passage of air along the perivascular sheaths to the mediastinum. The condition has been reported to follow hard and prolonged labour (Faust, 1940), to follow easy labour (Wiland and Crowder, 1951), and to follow labour complicated by bronchopneumonia (Roth, 1943).

CASE REPORT

The patient was a primigravida aged 21. The last period was on February 16, 1955, and the expected date of delivery November 23, 1955. Her blood was group B, Rh-positive. She was 64 in. (162.5 cm.) tall and weighed 101 lb. (45.8 kg.) when 12 weeks pregnant. The external pelvic measurements were normal. The antenatal period was uneventful, the maximum recorded blood pressure being 120/70 mm. Hg. There was no albuminuria or oedema. At the 36th week x-ray examination confirmed that the head was engaged. At the 38th week her weight was 122 lb. (55.3 kg.).

On November 23 the patient was given a routine medical induction of castor oil, 2 fl. oz. (60 ml.) by mouth, followed by an enema saponis and hot bath. Vague uterine contractions were noted eight hours later; these continued irregularly during the next 24 hours. At 1.30 a.m. on November 25 strong regular (1:15) uterine contractions were noted. At 3 a.m. 100 mg. of pethidine was given intramuscularly, and this dose was repeated at 7.30 a.m., at which time the contractions were strong and regular (1:10),

the cervix was dilated three fingerbreadths, and the patient was tired and distressed. At 2 p.m. the cervix was fully dilated and the membranes were ruptured artificially, whereupon she started to bear down vigorously. At 3.45 p.m. the head was on the perineum and the patient was still bearing down extremely vigorously with little progress. At 4.45 p.m. the soft tissues of the introitus were noted to be small, tight, and unyielding. The perineum was infiltrated with 20 ml. of 1% procaine hydrochloride and a wide right medio-lateral episiotomy was performed. At 4.50 p.m. she complained of a pain in the right chest. At 5.5 p.m. she was delivered spontaneously of a vigorous 6½-lb. (2,950-g.) male infant. At 5.10 p.m. a slight swelling of the right side of the face was noted. The placenta and membranes were delivered intact by fundal pressure at 5.30 p.m.

On November 26 a gross crepitant swelling of the face, especially in the periorbital regions, and more marked on the right side, was observed. This crepitant swelling extended into the right supraclavicular fossa, both infraclavicular fossae, and the entire upper anterior chest, again most marked on the right side. Pitting oedema of the right arm, forearm, and hand of non-crepitant type was noted. The patient was not cyanosed and did not complain of cough, dyspnoea, or dysphagia. Her temperature was 98° F. (36.7° C.), and pulse 88.

A diagnosis of subcutaneous emphysema was made. Clinical examination of the chest revealed symmetrical expansion. The percussion note was normally resonant, and cardiac and hepatic areas of dullness were elicited. The breath sounds were vesicular throughout and no adventitious were detected in any zone.

During the next 48 hours the crepitant swelling became more marked. No symptoms were elicited apart from a diminishing non-pleuritic type pain in the right chest. The patient was, however, much distressed by her bizarre and grotesque facial appearance.

Her pulse and temperature were recorded twice daily for the next 12 days. The pulse varied between 84 and 92 for the first seven days of the puerperium, settling to 74 by the tenth day. The maximum recorded temperature was 98.6° F. (37° C.) on the evening of the third day.

By the tenth day no subcutaneous crepitation could be elicited in any zone, and the pitting oedema of the right arm had resolved.

I wish to thank Miss M. A. Ridgley for her interest in the case and Dr. W. H. Callander for confirming the clinical signs.

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Avulsion and Rupture of the Tendo Calcaneus after Injection of Hydrocortisone

A cross-country runner aged 33 had been suffering from gradually increasing pain about the insertion of the tendo calcaneus for over nine months when he first sought advice on April 23, 1955. He had done no running for some months. There was no swelling of the tendon or round it, but there was tenderness in front of the upper part of its insertion, which seemed consistent with a diagnosis of chronic tendo calcaneus bursitis.

As it continued to get worse, on May 14 hydrocortisone acetate (25 mg. in suspension in 1 ml.) was injected into the painful region. This was followed by some relief of pain, and further injections were given on June 11 and July 9. On each of these occasions 50 mg. was injected, half on each side of the tendon. A little of the fluid was seen to run up in the paratenon on the second occasion, but when the point of the needle was in actual tendon tissue no fluid could be forced in.

After the third injection he felt complete relief and resumed training without apparent ill effect. On July 30, while running gently on smooth ground, he felt the tendon tear suddenly, but had no pain, and he limped home. There was an obvious gap, and the tendon was operated upon the next day.

Findings at Operation.—The superficial part of the tendon was found to be avulsed from the calcaneum. The deep part was ruptured about 1½ in. (3.8 cm.) above the heel, and a longitudinal split joined the two lesions. The avulsed part resembled a cast of the posterior surface of the calcaneum. Its lower margin was smooth and sharply defined, and it was drawn up and tucked into the gap in the deep part. There had been very little bleeding, and there was no scarring or other evidence of past or present inflammation. The tear in the deep part was obviously recent and a little frayed.

As a transverse incision above shoe level had been used, it was not possible to inspect the bursa or the back of the calcaneum effectively even by curving the incision downwards. Repair was carried out with stainless steel mattress sutures, the deep and superficial parts being overlapped and stitched together. No attempt was made to suture the avulsed part direct to the calcaneum, but it was tucked into position.

A short walking-plaster was continued for 7½ weeks, after which normal use was encouraged. Three months after the operation the lower part of the tendon was still much thickened, but not tender or painful, and the patient resumed cross-country running.

COMMENT

Whatever caused the original pain, it had been unchanged in character for about nine months. Chronic pain and swelling in the tendo calcaneus are common in long-distance runners, who usually recover in a few months whether they continue to run or not. Pain about the insertion is much less common, and is usually ascribed to calcaneal bursitis. It is aggravated by running and forces the sufferer to stop. If this patient's pain was due to bursitis it may have been secondary to a lesion of the tendon at its insertion. There was, however, at no time any pain or swelling at the back of the calcaneum.

The unusual nature of the avulsion leads to a suspicion that the final phase was influenced by the injections. The suspension may have been injected into a space, actual or potential, between the superficial and deep layers of the tendon, and absorbed slowly because of the relatively avascular nature of the tissue. Gonzalez (1953b) reported that remnants of the drug were still present in the tissues three weeks after it had been introduced at operation.

Avulsion appears to have been going on for some time. Simultaneous repair may have been hindered by the hydrocortisone. Experimental evidence of its effects on tendon healing is rather conflicting. Gonzalez (1953a) reported that local hydrocortisone did not affect repair of cut tendon sutured at a distance. Carstam (1953) stated that the tensile strength of repairs in dogs was not affected if firm apposition was maintained, but if apposition failed the repair was weaker than in controls. Berkin (1955) confirmed that neither cortisone nor hydrocortisone affected tendon union. Strict comparison with experiments in small animals may be vitiated by a slow rate of absorption in such a large tendon.

Progressive weakening of the attachment of the superficial part of the tendon would evidently increase the strain on the deep part, which would rupture under a stress insufficient to injure a normal tendon.

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