PUERPERAL CEREBRAL VENOUS THROMBOSIS AND EMBOLISM

(A Study of 43 Cases)

by

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Meniers in 1828 first reported hemiplegia in pregnancy and puerperium and in 1904 Von Hoesslin recorded 34 cases. Symmonds, Martin and Sheehan and Kendall contributed to the knowledge of the problem. Goldman and Eckerling reported 15 cases, 7 of them verified at autopsy.

The incidence of this condition varies in the reported series, Huggenberg and Kesserling 1 in 10,000 deliveries, Goldman and Eckerling 1 in 1,666. At Government General Hospital, Kurnool, 1 in 191 deliveries, during the period 1962-65 with 43 cases per 7,432 deliveries.

Aetiology

Thrombosis was stated by Sheehan and Martin to be due to retrograde dissemination of emboli via the vertebral veins from pre-existing thrombophlebitis of pelvic veins. In Kendall's opinion this was anatomically possible but physiologically impossible. Kendall suggested that the hypercoagulable state of blood, whirling and eddying of blood in the intracranial venous sinuses, the anatomical relation of cortical veins to the sinuses causing stagnation of blood in cranial sinuses and damage or change in the endothelial lining of blood vessels due to bacteria or disease, predispose to venous thrombosis in the puerperium. Venous stasis, increased viscocity of blood, anaemia, protein deficiency and low grade infection are important predisposing factors.

Clinical Features

Table I shows the incidence of the symptoms. Headache appears first and persists till other symptoms disappear and aphasia disappears first. Hemiplegia in 28 cases, convulsions

TABLE I

Clinical Features

Hemiplegia	28	(Right 13 and Left 15)
Convulsions	22	
Coma	20	
Drowsiness	8	
Aphasia	15	
Headache	21	
Facial palsy	10	
Meningism	6	
Psychosis	7	
Twitchings	2	
Dysphagia	1	
Vomitings	2	
Blindness	1	
Thromphlebitis of leg	3	

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lasting 1-3 days in 22 cases, coma in 20 cases, headache in 21 cases and aphasia in 15 cases were the common clinical features in our series. Psychosis in 7 cases, drowsiness in 8, meningism in 6, facial paralysis in 10 cases were less common features. Dysphagia, blindness in 1 case each and twitchings and vomiting in 2 cases each were noticed. Thrombophlebitis of lower limbs was present in 3 cases and gross puerperal sepsis in 7 cases.

The blood pressure was over 140/90 mm Hg in 8 cases and severe anaemia (below 8 gm% Hb) in 14 cases, and between 8-10 gms Hb% in 14 cases (nearly 70%). All except 2 cases had full-term natural delivery at home. Of the 2 cases in the hospital, one had pre-eclampsia and the other forceps application with intrapartum sepsis and vesico-vaginal fistula. The interval between delivery and onset of symptoms was less than 7 days in 5 cases, 8 to 14 days in 21 and 15 to 20 days in 15 cases. The duration of symptoms before admission was within 1 day in 19 cases, 2 days in 10, 3 to 7 days in 9 cases, over one week in 2, not known in 3 cases. The incidence of parity was, primiparae 7 cases, second parae 13, 3 to 4 parae 10 cases, over 4th parae 13 cases.

Age distribution was, 16 cases below 20 years, 24 cases between 20 to 30 years.

Diagnosis

Martin, Barnett and Hyland suggested that cerebral thrombosis should be suspected as the cause of sudden hemiplegia and convulsions in the puerperium in a previously healthy woman in the absence of endocarditis. Other conditions to be considered in the diagnosis are; cerebrovascular accidents, inflammation as encephalitis meningitis; obstetric conditions as, postpartum eclampsia, epilepsy, psychosis, hypertensive encephalopathy and other causes of coma as, hyperglycaemia.

Investigations

Radiography of skull, fundus examination, laboratory investigations of cerebrospinal fluid, electro-encephalography, pneumo-encephalography and cerebral angiography are useful aids in the diagnosis. The following were the results of investigations in our series:

Fundus examination: Normal 12 cases, pallor of disc in 2, haemorrhages in 3, engorged veins in 8 cases.

Cerebrospinal fluid: Normal in 21 cases, R.B.C.s present in 7 cases, C.S.F. under increased pressure in 7 and globulin positive in 7 cases.

The findings at post-mortem examination done in 3 cases were: In one case, thrombosis of left cerebral vein, superior sagittal sinus and left cerebral infarct. In the second case thrombosis of Galen's vein, straight sinus, transverse sinus and ventricular haemorrhage. In the third case thrombosis of superior sagittal sinus and cerebral vein.

Prognosis and Treatment

Factors in the prognosis are, severity, the site and extent of lesion in the brain, the time of onset in pregnancy and treatment given. Therapy consists of bed rest, sedation, lytic cocktail, anticonvulsants, antibiotics and hypertonic glucose intravenously

to relieve intracranial tension. Anticoagulants given to prevent propagation of thrombus or recurrence are hazardous and are contra-indicated (Goldman and Eckerling). Anticoagulants are excluded by cerebral pathology and all are of questionable value except antibiotics and anticonvulsants (Kreiger). Prophylaxis by early ambulation and physiotherapy was thought to be useful by Haultain and Irving and to be of no value by Bigby and De Soldenhoff.

TABLE II

Treatment

1.	Tetracycline + Glucose I.V.	12
2.	Strepto-penicillin + Glucose I.V.	13
3.	Heparin & Dindevan + Glucose I.V.	15
4.	No treatment	3
5.	Paraldehyde	14
6.	Largactil	7

Table II shows the treatment given in our series. Tetracyclines were given in 12 cases and strepto-penicillin in 13 cases, paraldehyde to 14 cases and largactil to 7, intravenous glucose and nicotinic acid to 40 cases and anticoagulant therapy (Heparin and Dindevan) to 15 cases; no treatment to 3 cases. There were 17 deaths among 43 cases (39%). Five of the 15 cases treated with anticoagulants and 9 of the 25 cases treated without anticoagulants and 3 untreated cases, died.

Treatment was mainly with antibiotics, anticonvulsants and glucose intravenously with nicotinic acid and in the earlier cases with anticoagulants. The duration of stay in the hospital in the fatal cases was less than one day in 6 cases, 2 to 5 days in 9 cases, 6 to 10 days in 1 and over 6 weeks in 1 case.

Case Notes of Mitral Stenosis with Puerperal Cerebral Embolism

Mrs. M. age 20 years, second para, was admitted on 23-11-'63 with complaint of inability to talk and unconsciousness since a day. She was delivered naturally 9 days ago at full-term of a live female baby. She had dyspnoea in the later weeks of pregnancy. On examination, she was anaemic, semicomatose with nystagmus of left eye. There was presystolic murmur, rough rumbling mid-diastolic murmur, in mitral area and accentuated pulmonary second sound. Heart boundaries were within normal limits. Left hemiplegia and facial paralysis, and diffuse rales and crepitations were present at right base of lung. Liver was enlarged half an inch below the costal margin; uterus 16 weeks pregnancy size, no meningism.

Temperature 100°F, pulse 120 per minute and B.P. 100/70 mm Hg.

Investigations

Urine — Pus cells present. Haemoglobin, 7 Gm%, W.B.C. 8400. Cerebrospinal fluid — Globulin negative, protein 10 mg%, sugar 100 mg., chlorides 760 mg%, culture negative for pyogenic organisms. Blood urea was 74 mg%. X-ray chest showed mitral configuration of heart, hilar opacities and haziness of right apical region. Fundus examination showed blurring of disc margins, engorged veins and temporal pallor. Prothrombin time was 16 seconds and 19 seconds (control 30 seconds).

Treatment

Digoxin tablet orally, nicotinic acid, and Terramycin 250 mg, 6 hourly, Dindevan 100 mg daily, aminophyllin. Ryle's tube was kept in for feeding. Streptomycin, 22 gms were given for suspected tuberculosis, without improvement. With marked wasting, semicomatose and irritable state and hemiplegia the patient died on 4-1-'64 after 43 days in hospital.

Case 2
Recurrent case

Mrs. N., aged 30 years, 11th gravida, was admitted on 16-6-'62 with complaint of headache and history of fits following delivery 5 years ago. Delivery 9 days ago and

fits since 3 days. There was right upper limb paresis with wrist drop and right hemiplegia. Psychosis was present. Temperature 102°F., Pulse 80 per minute cerebrospinal fluid and fundus examination were normal. She was discharged relieved after 30 days hospitalisation.

Case 3

Mrs. P., aged 20 years, 2nd gravida, was admitted on 14-6-'63 with history of C.S.O.M. and right hemiparesis in puerperium after normal delivery 3 years ago. Uterus was 36 weeks, pregnancy and the foetus was in left occipito-transverse position. She was delivered normally at full term, without any complication.

Case 4

Left cerebral, subclavian and jugular venous thrombosis. Mrs. R., aged 28 years, 5th para, was admitted on 13-11-'63 with history of coma and fits since 4 days. She was delivered naturally 16 days ago. Left hemiplegia, facial paralysis and psychotic symptoms were present. On 11-12-'63 swelling of left arm, dysphagia and tenderness of neck on left side were noticed due to thrombosis of left subclavian and internal jugular veins following earlier cerebral thrombosis. She had complete recovery at the time of discharge on 28-12-'63.

Summary and Conclusion

Forty-three cases of cerebral venous thrombosis, including a case of embolism with associated mitral stenosis, 2 cases of recurrent thrombosis and a case of left subclavian vein thrombosis, were observed at Government General Hospital, Kurnool. The incidence of 1 in 191 was higher than in the reported series.

Anaemia with mild sepsis was an important factor in aetiology. Diagnosis was mainly by clinical features, excluding other intracranial lesions by examination of cerebro-spinal fluid, fundus and neurological examination and in 3 cases it was confirmed at autopsy. In 85 per cent of cases the onset was between 8 to 20 days in puerperium. By treating with antibiotics, anticonvulsants, sedatives and intravenous hypertonic glucose, mortality rate was 39%, 35% dying within one day after admission. The value of anticoagulants was doubtful as death rate was 33% with anticoagulants and 36% without them. The prognosis depends more on the site and extent of lesion in the brain than on the treatment.

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