COMPLETE HEART BLOCK COMPLICATING PREGNANCY

(A Case Report)

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Introduction

Complete heart block is so rare a complication of pregnancy as to warrant individual case reports. Although varying degrees of heart block are not infrequently seen, complete heart block with absolute dissociation of atrial and ventricular rhythms is distinctly uncommon. In 1914, Nanta reported the first case and upto date less than 75 cases have been reported in the literature. In Cardio-Obstetric Clinic of the Nehru Hospital, Chandigarh, we encountered two such cases over a period of five years (1969-1973) in 7660 deliveries.

CASE 1

Mrs. N. K., 26 years old primigravida reported in May, 1971 with 30 weeks of pregnancy and history of breathlessness on exertion for the last one year. She had to leave the National Cadet Corps training because of this disability. There was no history of syncopal attacks, palpitation or paroxysmal nocturnal dysponea. Physical examination revealed an obese young woman with pulse rate of 48/mt. There were no signs of congestive heart failure or cardiomegaly. First heart sound was normally heard. Grade II systolic murmur was present, best heard in the pulmonary area. Maximum pulse rate went upto 50 per minute after exercise. E.C.G. done at this stage showed complete heart block. Patient had no antenatal complications except vulval warts for which chemical cauterization with trichloracetic acid was done. She was given isoprenaline 10 mg six hourly from 22nd June to 3rd July, 1971 without any improvement in her symptoms. It was discontinued and she was managed only on sedatives. She had an outlet forceps delivery at term and delivered a healthy male baby weighing 2.6 kg. She had blood loss (approx. 300 cc) due to uterine hypotonia and it was controlled with injection syntometrine intramuscularly. No blood transfusion was required. There were no signs of congestive heart failure during labour. Puerperium was uneventful. She was discharged on 27th July, 1971 with advice to use condom and orthogynol jelly for contraception.

She was seen again in August, 1972 during her second pregnancy at 26 weeks of gestation. There was no deterioration in her cardiac status. She had again an uneventful pregnancy and delivered a healthy male baby with outlet forceps on 7.11.72 without any complication. She was not given any specific drugs during this pregnancy for her cardiac condition.

CASE 2

Mrs. P. 22 years primigravida, was diagnosed to have slow pulse rate at the age of 13 years during some febrile illness—enteric fever. She

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had no complaints of dyspnoea, palpitation or Adams-Stokes attacks.

She reported in February, 1972 for investigation of sterility and was found to have pulse rate of 48/mt which was regular. Cardiac examination revealed first heart sound of varying intensity, second heart sound was normal and normally split. Ejection systolic murmur was heard over the precordium and no atrial sound could be heard. E.C.G. showed complete dissociation of P waves and Q.R.S. complexes which were coming independent of each other. Q.R.S. complexes were normal. She was diagnosed as a case of complete heart block and was being investigated for sterility when she conceived. Her expected date of delivery was 8th November, 1973.

The aetiology of heart block was considered to be congenital because of relatively higher pulse rate, detection at a younger age and no associated cardiac lesion. Patient remained asymptomatic except for premature onset of labour at 34 weeks which responded to rest and sedation. At 38 weeks she was found to have mild degree of cephalopelvic disproportion.

Transvenous pace-maker catheter was put in under cover of antibiotics and caesarean section was done under general anaethesia (I/V Pentothal, Nitrous oxide and oxygen) with continuous cardiac monitoring. Soon after induction of anaesthesia there was some tachycardia and disturbance of cardiac rhythm but it settled quickly by improving oxygenation. She delivered a healthy male baby weighing 3 Kg. with an Apgar score of 10. Postoperative period was uneventful. The transvenous pacemaker was removed and she is awaiting elective **His Bundle** recording.

Discussion

The term heart block refers to conduction disturbances where impulses fail to traverse the junctional tissue and the resultant rhythm will depend upon the degree of block. Approximately 90% of heart block cases occur after the age of 50 years and the condition is twice as common in males than in females (Mendelson, 1956). Accordingly it is rather a rare complication of pregnancy. Patients with heart block may be completely free of symptoms but some may

TABLE I

Summary of 47 Cases of Heart Block With Pregnancy (Mendelson, 1956)

Heart lesion	No. of cases	C.H.F.	Toxaemia of pregnancy	Delivery	Maternal death	Foetal loss
Acquired:						
Rheumatic—14 Infection—6 Syphilitic—2 Coronary—1 Myocarditis—3	26	2	1	Vag.—19 C.S.—4 Abor.—1 **Hyst.—1 Un-del.—1 (Antepartum death).	C.H.F.—2 Endocarditis—1 Sepsis—1 Tox.—1	A.P.* death—1 Abor.—1 Hyst.—1 Neonatal (syphilitic)—2
Congenital	21	1	3	Vag.—17 C.S.—2 Abor.—2	Tox. with C.H.F.—1	Abor.—2
Total	47	3	4	—	6	7

* A.P. Death = Antepartum death.
** Hyst. = Hysterotomy.

complain of palpitation, dysponea, vertigo, and fainting attacks. Adams in 1826 and Stokes in 1845 described the clinical picture now referred to as Admas-Stokes syndrome. These attacks are most disturbing and death has occasionally resulted from ventricular standstill or ventricular fibrillation. Cyanosis is seen more in congenital type due to associated anomalies, usually an interventricular septal defect. Heart failure is reported only with other complications.

Neither acquired nor congenital heart block per sé creates any special obstetrical problem and ultimate outcome depends upon the underlying disease. Causes of depression of the cardioventricular pacemaker and hence precipitation of Adams-Stokes syndrome or syncopal attacks include excessive vagal stimulation, acidosis, hypoxia, changes in the concentration of cations, e.g. rise in calcium or fall in potassium and perhaps hypervolaemia. Adams-Stokes-episode can be precipitated by increase in vagal tone due to valsalva manoeuvre during a forceful uterine contraction during labour. Same can be caused due to hypoxia if anaesthesia is required for delivery. Hence, care is to be taken to minimise the risk by cutting short the secnd stage of labour by prophylactic forceps application and maintaining maximum oxygenation if anaesthesia is required. The increase in stroke volume which accompanies the hypervolaemia of pregnancy, superimposed on the abnormally large stroke volume already present in these patients, appears to be a potentially dangerous situation. One of the 3 cases reported by Mowbray and Bowley, (1948) died though this was thought mainly due to development of toxaemia (eclampsia with congestive heart failure). Begg and Thompson, (1961) described a primigravida with congenital complete heart block who had Stokes-Adams attacks for the first time during 18th week of pregnancy. Two similar cases where Adams-Stokes attacks occurred for the first time during labour were reported by Schonbrun, Rowland and Castroquiroz, (1966) and these patients had prophylactic transvenous pacemakers during their next deliveries. Mendelson, (1966) in review of 47 such cases has summarised the obstetric performance and outcome reflecting thereby the possible complications and mortality. There were six maternal deaths, majority occurring in acquired variety (Table I).

The only death reported in congenital variety was as a result of eclampsia and congestive heart failure and not due to her cardiac condition.

The first reported experience with a cardiac pacemaker in an obstetric patient was described by Shouse and Acker in 1964. Since then there have been 7 more such case reports representing unique experiences as many methods have been employed in different patients. In some cases pacemaker was used only during labour (Giuffrida *et al.*, 1968; McHenry, 1972) similar to the second case reported here. In other cases pregnancy occurred after a pacemaker device had been implanted earlier (Shouse *et al.*, 1964; Buchner *et al.*, 1964; Ginns *et al.*, 1970 and Middleton *et al.*, 1971). There have been reported some problems of skin ulceration and need for re-implantation of the device in cases where pregnancy occurred after the permanent pacing but there was no major complication or any mortality in any of these cases. Doubtlessly, the development of the cardiac pacemaker has greatly lessened the risk associated with heart block during pregnancy.

In congenital heart block the cardiac musculature is unimpaired and the defect is often compensated by cardiac hypertrophy. The longevity of such cases is assumed to be due to:

1. Presence of an accelerated junctional pacemaker site under autonomic control.
2. The stability of this pacemaker without emergence of cardioventricular foci.
3. Continued and appropriate haemodynamic responses to stress and exercise.
4. The infrequency of congenital heart disease associated with the heart block.

Since the majority of reported cases of heart block in pregnancy are congenital in origin, the prognosis is good and interruption of pregnancy or sterilization of the patient in such cases unwarranted. Gazes *et al.*, 1965 have reported one case who underwent 6 deliveries without any deterioration in her cardiac status. The prognosis has been further improved by use of transvenous pacemaker in cases of acquired variety or where some operative delivery is performed due to obstetrical indications.

Summary

Problem of complete heart block complicating pregnancy has been discussed and two cases managed in this Institute are reported. One patient had two deliveries uneventfully. The second patient required caesarean section due to cephalopelvic disproportion and had prophylactic transvenous pacemaker inserted. None of the cases had any deterioration in their cardiac status during pregnancy.

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