Pregnancy and delivery in patients with coronary artery lesions caused by Kawasaki disease

E Tsuda, Y Ishihara, K Kawamata, S Tsukano, R Negi, S Echigo, Y Chiba


Thirty seven years have passed since the first description of Kawasaki disease (KD) and some women with coronary artery lesions caused by KD are now of childbearing age. The incidence of giant aneurysms leading to ischaemic heart disease among women is about one third that among men. There is little information on managing pregnancy and delivery in patients with coronary artery disease. We analysed the clinical course of pregnancy and delivery in this population and determined the nature of problems.

PATIENTS AND METHODS
We encountered 13 pregnancies and deliveries in 10 patients who had coronary artery lesions caused by KD from 1993 to 2004 in our follow up clinic. Their ages at delivery ranged from 18–34 years (median 28 years) (table 1). All patients underwent cardiac catheterisation including selective coronary angiography and left ventriculography before pregnancy. The interval between the latest coronary angiogram and delivery ranged from eight weeks to eight years. All patients underwent a treadmill test and exercise stress radioimmunological myocardial imaging before pregnancy.

RESULTS
Nine patients had a normal left ventricular ejection fraction, although one patient (patient 1) had an ejection fraction of 43% caused by asymptomatic myocardial infarction. Three patients (patients 1, 2, and 8) had undergone coronary artery bypass grafting because of stenotic lesions caused by KD. All patients had no significant ischaemic change before pregnancy in the examination.

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Seven of the 10 vaginal deliveries were assisted, six by forceps use and one by vacuum extraction. Eight vaginal deliveries were performed under epidural anaesthesia. The duration of labour ranged from 3.5 to 8.5 hours and the blood loss from 320 to 950 ml.

Table 1

<table>
<thead>
<tr>
<th>Patient</th>
<th>Age (years)</th>
<th>Coronary artery lesion</th>
<th>RCA</th>
<th>LCA</th>
<th>Delivery mode</th>
<th>Assisted</th>
<th>Anaesthesia</th>
<th>Medication</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>26</td>
<td>OC (seg 1)</td>
<td></td>
<td></td>
<td>Vaginal</td>
<td>Forceps</td>
<td>Epidural</td>
<td>Nitrites 40 mg</td>
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<tr>
<td>2</td>
<td>18</td>
<td>ANU (seg 1)</td>
<td></td>
<td></td>
<td>Vaginal</td>
<td>Forceps</td>
<td>Epidural</td>
<td>None</td>
</tr>
<tr>
<td>3</td>
<td>25</td>
<td>ANU 75%LS (seg 2)</td>
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<td></td>
<td>CS</td>
<td>No</td>
<td>General</td>
<td>Aspirin 81 mg</td>
</tr>
<tr>
<td>4</td>
<td>29</td>
<td>ANU 75%LS (seg 2)</td>
<td></td>
<td></td>
<td>CS</td>
<td>No</td>
<td>Epidural</td>
<td>Aspirin 81 mg</td>
</tr>
<tr>
<td>5</td>
<td>23</td>
<td>None</td>
<td></td>
<td>LCA dilatation</td>
<td>Vaginal</td>
<td>Forceps</td>
<td>Epidural</td>
<td>None</td>
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<tr>
<td>6</td>
<td>32</td>
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<td></td>
<td></td>
<td>Vaginal</td>
<td>None</td>
<td>None</td>
<td>None</td>
</tr>
<tr>
<td>7</td>
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<td>Vacuum</td>
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<tr>
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<td>34</td>
<td>ANU 50%LS (seg 1)</td>
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<td></td>
<td>CS</td>
<td>No</td>
<td>Epidural</td>
<td>None</td>
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<tr>
<td>9</td>
<td>28</td>
<td>None</td>
<td></td>
<td></td>
<td>Vaginal</td>
<td>Forceps</td>
<td>Epidural</td>
<td>Aspirin 81 mg</td>
</tr>
<tr>
<td>10</td>
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<td>ANU(1)</td>
<td></td>
<td></td>
<td>Vaginal</td>
<td>Forceps</td>
<td>Epidural</td>
<td>Aspirin 81 mg</td>
</tr>
</tbody>
</table>

*Compliance was poor.

AN, aneurysm; ANU, giant aneurysm; CABG, coronary artery bypass grafting; CS, caesarean section; LAD, left anterior descending coronary artery; LCA, left coronary artery; LCA, left circumflex artery; LMT, left main trunk; LS, localised stenosis; OC, occlusion; RCA, right coronary artery; seg, segment.
extrasystoles were detected in eight patients. Unifocal extrasystoles increased during pregnancy and the postdelivery period in two patients.

One patient (patient 7) delivered prematurely because of early rupture of the membranes at 26 weeks’ gestation. She had a vaginal haemorrhage at 23 weeks’ gestation. She was admitted after two days and discontinued aspirin. She delivered an extremely premature baby of 670 g with forceps assistance and epidural anaesthesia. The extremely premature baby had a visual disorder caused by premature retinopathy.

DISCUSSION
The most important problem in pregnancy and delivery for patients with coronary artery disease caused by KD is possible thrombosis of a coronary artery leading to acute myocardial infarction, which can greatly affect the prognosis of both mother and fetus. One review estimated the incidence of myocardial infarction in pregnancy at 1 in 10 000.3 None of our patients had cardiac events relating to thrombosis. Low dose aspirin is considered to be safe for pregnancy and delivery.5 Only four of our patients were taking aspirin, one of whom had a premature delivery. The relation, if any, between vaginal haemorrhage and the effect of aspirin is unknown. The need for an antithrombotic agent and its form should be determined based on balancing risks of treatment with risks of cardiac and obstetric complications, and on the extent of the coronary artery lesions caused by KD.

Nine patients underwent vaginal delivery without any cardiac complications. An assisted second stage of labour with epidural anaesthesia is preferred for patients with cardiac disease because it helps to maintain stable haemodynamic function and to decrease the burden on the heart by shortening delivery time. If patients have symptoms, a caesarean section should be considered.

An assisted second stage of labour with epidural anaesthesia is preferred for patients with coronary artery lesions caused by KD. Although low dose aspirin for prevention of myocardial infarction is considered to be useful, further investigation for treatment with an antithrombotic agent during pregnancy based on the extent of the coronary artery lesions will be needed. The experience will need to be formulated by careful management in pregnancy and delivery in this population in the future.

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Accepted 2 February 2005

REFERENCES

STAMPS IN CARDIOLOGY
The ECG on stamps

The Kingdom of Tonga released a set of four stamps to commemorate 30 years membership of the Commonwealth. These covered supporting education, the arts, agriculture, and health. The health stamp design includes medicine, surgery, nursing, and, in the background, the electrocardiogram. Flags of the Commonwealth states frame the design.