Discordant Twins with the Smaller Baby Appropriate For Gestational Age – Unusual Manifestation of Superfetation

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Abstract

A case report of superfetation is reported. The first of twins was of 32 weeks gestation and the baby was of appropriate size and development for the gestational age, calculated from the last menstrual period. The second twin was of 36 weeks gestation.

Introduction

Superfetation is fertilization and subsequent development of an ovum when a foetus is already present in the uterus. Growth discordance in multiple pregnancies due to placental insufficiency, twin to twin transfusion or aneuploidy need to be differentiated from superfetation. In most instances the larger twin is nearer appropriate size for gestational age calculated from the last menstrual period (LMP). We report a case where we considered the possibility of superfetation because the smaller of the twin was of appropriate maturity, weight and length for gestational age - circumstances that argued against intrauterine growth retardation in the smaller twin – the common cause of discordance in multiple pregnancies.

Case Report

A 21-year-old mother of two had an antental ultrasound examination done at 26 weeks after her last menstrual period (LMP). This showed twins, one who was of appropriate size for duration of amenorrhoea and the other who was approximately four weeks too large. The ultrasound findings are described in Table 1.

Six weeks later, after 32 weeks of amenorrhoea, live twins were delivered. The first of twins (Twin A) weighed 980 grams and the next baby (Twin B) weighed 2160 grams. Detailed neurological assessment using the New Ballard Scoring (1), was done on day two of life. The score for Twin A was 15, suggesting a gestational age of 30 weeks (+/- 2 weeks) and score for
Twin B was 32, appropriate for 36 weeks (+/- 2 weeks). Table 2 lists the differences between the twins. Radiological examination for bone age done on the second day of life revealed the absence of epiphysis at the lower end of femur and upper end of tibia in Twin A while they were present in Twin B (Figure 1, 2). The epiphysis at the lower end of femur appears between 31 and 40 weeks and for the upper end of tibia between 34 weeks and 5 post natal weeks (2). Twin A had a bone age of less than 31 weeks and Twin B had a bone age of at least 34 weeks.

X-ray chest with mandible showed absence of calcified crowns of the first and second deciduous molar in Twin A and both crown calcified in Twin B (Figure 3, 4). The crowns of the first and second molars are never seen prior to 33 and 36 weeks respectively and seen regularly after that (3). These criteria suggest that twin A was at less 33 weeks and twin B was at least 36 weeks old.

Ophthalmologic examination showed the cornea was hazy in Twin A and the underlying pupillary membrane could not be visualised. The retinal vessels had not reached the nasal ora serrata. In Twin B the cornea was clear, there was no pupillary membrane and the retinal vessels migration was complete on the nasal side and near complete on the temporal side. Retinal vessels reach nasal ora serrata by 36 weeks and periphery on the temporal side by 40 weeks.

Discussion

Intra uterine growth retardation is the usual cause of discordance in multiple pregnancies. A search of Pubmed has shown that there are 18 cases of superfetation reported in literature (4-21). In all these previous reports the larger twin was of appropriate gestational age and the smaller twin was small for the gestation (calculated from the date of the last menstrual period). In our case the smaller twin was of appropriate size and maturity for the gestation assessed
from the mother’s report of LMP and the second twin was approximately a month too large and mature. Superfetation was considered as a possible explanation. However bleeding one month after conception occurs in about 8% pregnancies and represents a physiological response to implantation or slight bleed from the endometrium in early pregnancy (22). We therefore also considered the possibility that both twins were conceived simultaneously a month prior to the presumed date of the LMP, and the smaller Twin A was small-for-dates.

Detailed neurological and physical assessment is considered the most reliable method of estimation of gestational age, in circumstances where intrauterine growth retardation (IUGR) is suspected and there is uncertainty using LMP (2). We used the New Ballard Score (1). Using these criteria the first of the twin was 30 weeks and the second was 36 weeks (+/- 2 weeks). This evidence of disparity in the gestational ages of the ‘twins’, was corroborated by the estimation of age based on anthropometric measures (weight, length and head circumference), ophthalmic examination, bone age and dental age estimates. These evidence taken together, suggest that there was a real difference of approximately 4 weeks in the gestational ages of the twins and this was in keeping with the findings of the ante-natal ultrasound examination.

Among the evidence listed above, anthropometric measurements and bone maturation are delayed in first-trimester-malnutrition which results in symmetric growth retardation (2, 23). However the work of Kuhns et al (3) suggest that the age of calcification of the crowns of the molars is not affected by IUGR and we use this criteria along with the New Ballard Score and the ophthalmic examination to confirm the disparity in gestational ages of the neonates. Fortuitous circumstances in our case (distinct marker separating the two fertilizations in the form of bleeding on implantation of first ovum) helped us to suspect superfetation. Harrison et al (4) have recently reported a case of superfetation and suggest that in growth-discrepant
multiple deliveries, skilled neurosonography and ophthalmic examination may be used to support the diagnosis of superfetation when detailed first trimester data is lacking. We would like to highlight the role of the New Ballard Scoring and dental age to help clinch the diagnosis.

References


15. Bertrams J, Preuss H. A case of twins with probable superfetation

16. Litschgi M, Dietrich H. A case of superfetation


19. Norgaard-Pedersen B, Moller J, Trolle D, Sorensen SA. Alpha-fetoprotein concentration in cord blood from twins and from a set of quadruplets--a case of superfetation?


Table 1.

Antenatal ultrasonography findings at 26 weeks after LMP

<table>
<thead>
<tr>
<th></th>
<th>Twin A</th>
<th>Twin B</th>
</tr>
</thead>
<tbody>
<tr>
<td>Presentation</td>
<td>Cephalic</td>
<td>Breech</td>
</tr>
<tr>
<td>Placenta</td>
<td>Anterior</td>
<td>Posterior</td>
</tr>
<tr>
<td>Biparital diameter</td>
<td>65 mm</td>
<td>77 mm</td>
</tr>
<tr>
<td>Femur Length</td>
<td>49 mm</td>
<td>48 mm</td>
</tr>
<tr>
<td>Head circumference</td>
<td>235 mm</td>
<td>276 mm</td>
</tr>
<tr>
<td>Gestation</td>
<td>26 weeks +/- 2 weeks</td>
<td>30 weeks +/- 2 weeks</td>
</tr>
</tbody>
</table>
### Table 2

**Differences between the twins at birth**

<table>
<thead>
<tr>
<th></th>
<th>Twin A (Gestational age range in weeks +/-2SD)</th>
<th>Twin B (Gestational age range in weeks +/-2SD)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Weight (gm)*</td>
<td>980 (26-30)</td>
<td>2160 (30-36)</td>
</tr>
<tr>
<td>Length (cm)*</td>
<td>36.5 (27-29)</td>
<td>42.5 (30-34)</td>
</tr>
<tr>
<td>Circumference head (cm)*</td>
<td>27 (27-31)</td>
<td>31 (31-37)</td>
</tr>
<tr>
<td>New Ballard Score</td>
<td>15 (30 +/- 2 weeks)</td>
<td>32 (36 +/- 2 weeks)</td>
</tr>
<tr>
<td>Epiphysis lower end of femur</td>
<td>Absent (Less than 31 weeks)</td>
<td>Present (31 – 40 weeks)</td>
</tr>
<tr>
<td>Epiphysis upper end tibia</td>
<td>Absent (Less than 34 weeks)</td>
<td>Present (34 – 5 post natal weeks)</td>
</tr>
<tr>
<td>Calcified crown of 1st deciduous molar</td>
<td>Absent (less than 33 weeks)</td>
<td>Present (more than 33 weeks)</td>
</tr>
<tr>
<td>Calcified crown of 1st deciduous molar</td>
<td>Absent (less than 36 weeks)</td>
<td>Present (more than 36 weeks)</td>
</tr>
<tr>
<td>Cornea</td>
<td>Haze present</td>
<td>Transparent</td>
</tr>
<tr>
<td>Retinal vessels migration</td>
<td>Not reached nasal ora serrata (less than 36 weeks)**</td>
<td>Complete on the nasal side and near complete on the temporal side. (more than 36 weeks)**</td>
</tr>
</tbody>
</table>

*Norms for antropometry: Usher R et al J Ped 1969 74 901


References for other norms as described in the text
Legend for Figures

Figure 1
Radiological examination for bone showing absence of epiphysis at the lower end of femur and upper end of tibia in Twin A

Figure 2
Radiological examination for bone showing epiphysis at the lower end of femur and upper end of tibia in Twin B

Figure 3
X-ray chest with mandible showed absence of calcified crowns of the first and second deciduous molar in Twin A

Figure 4
X-ray chest with mandible showed calcified crowns of the first and second deciduous molar in Twin B