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FETOMATERNAL ALLOIMMUNE THROMBOCYTOPENIA (FMAIT or NAIT)

Abstract

Fetomaternal or neonatal alloimmune thrombocytopenia (FMAIT or NAIT) is the most common cause of severe neonatal thrombocytopenia in otherwise well term infants, and can lead to serious bleeding, intracranial haemorrhage and sometimes death of the fetus or infant¹. First pregnancies are often severely affected and the diagnosis is usually made with the birth of a first affected infant. There is therefore a current debate about the utility of antenatal screening for the condition. The aims of this study are to determine the true incidence of severe haemorrhage associated with FMAIT, to describe the clinical outcome of affected cases and to identify prognostic factors, and thus to inform ongoing review of the case for antenatal screening for this condition.

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Background

FMAIT is the most common cause of severe neonatal thrombocytopenia in otherwise well term infants¹, and is analogous to the fetal/neonatal anaemia caused by haemolytic disease of the newborn (HDN). The condition results from a fetomaternal incompatibility in platelet alloantigen, most commonly HPA-1a, and can lead to serious bleeding, intracranial haemorrhage and sometimes death of the fetus or infant². Incidence of clinically affected infants is estimated to be 1 in 15,000 births (approximately 50 cases per year in the UK)^{1,3}. In contrast to HDN, first pregnancies are often severely affected and the diagnosis is usually made with the birth of a first affected infant. There is therefore a current debate about the utility of screening for the condition. A recent evaluation against the National Screening Committee criteria for appraising a screening programme has identified a number of deficiencies in basic epidemiological information needed to assess the utility of antenatal screening⁴.

Additionally, there are considerable controversies in the optimal management of FMAIT-affected pregnancies⁴. There is no clear approach to the antenatal management of first affected pregnancies, and several questions remain in the approaches to managing second and subsequent affected pregnancies⁵. This is the first study to be conducted simultaneously through the BPSU and the UK Obstetric Surveillance System (UKOSS). The combined use of both obstetric and paediatric reporting systems will help to ensure identification of cases is as complete as possible and will allow collection of comprehensive antenatal and postnatal information.

We will also be able to assess the outcomes following different antenatal management strategies. The study results will be used to inform ongoing review of the case for antenatal screening for this condition.

Coverage	United Kingdom (ie. Excluding Republic of Ireland)
Duration	October 2006 - October 2007 (13 months).
Research Questions	<ol style="list-style-type: none">1. What is the current incidence of clinically diagnosed FMAIT among infants born in the UK?2. How are such FMAIT-affected infants managed?3. What are the prognostic features associated with FMAIT?4. What are the outcomes among these FMAIT-affected infants at birth and 12 months?
Case definition	<p>Any infant live born during the study period with a documented maternal/fetal platelet antigen incompatibility, usually in the presence of maternal antibodies, AND at least one of the following:</p> <ol style="list-style-type: none">i. Cord platelet count at birth $<50 \times 10^9/l$ii. Haemorrhagic complications before or after birth (e.g. intraventricular haemorrhage, GI bleed, bruising or petechiae)iii. Antenatal therapy with either maternal steroids, IVIg or fetal platelet transfusion.
Reporting instructions	<p>Please report any infant born since the beginning of October 2006 in the UK with newly-diagnosed FMAIT (confirmed or suspected), seen by you for the first time in the last month. Please report all cases of FMAIT irrespective of whether the condition was diagnosed before or after birth or whether the case has also been reported to UKOSS through your hospital obstetrician or midwife.</p> <p>Cases reported from the Republic of Ireland will not be included in this study.</p>
Methods	Paediatricians reporting a case through the orange card system will be asked to complete a questionnaire seeking information on infant diagnosis, management and outcomes. A further follow-up questionnaire will be sent when the infant is one year of age.
Ethics Approval	The study has been approved by the London MREC (Study ref 06/MRE02/53).
Funding	Wellbeing of Women.
Reference(s)	<ol style="list-style-type: none">1. Serrarens-Janssen VM, Steegers EA, van den Bos A, <i>et al.</i> Experiences with fetomaternal alloimmune thrombocytopenia in the Netherlands over a 2-year period. <i>Acta Obstet Gynecol Scand</i> 2005; 84(2):203.2. Dreyfus M, Kaplan C, Verdy E, Schlegel N, Durand-Zaleski I, Tchernia G. Frequency of immune thrombocytopenia in newborns: a prospective study. Immune Thrombocytopenia Working Group. <i>Blood</i> 1997; 89(12):4402-6.3. Williamson LM, Hackett G, Rennie J <i>et al.</i> The natural history of fetomaternal alloimmunization to the platelet-specific antigen HPA-1a (PIA1, Zwa) as determined by antenatal screening. <i>Blood</i> 1998; 92:2280-7.4. Murphy MF, Williamson LM, Urbaniak SJ. Antenatal screening for fetomaternal alloimmune thrombocytopenia: should we be doing it? <i>Vox Sang</i> 2002; 83 Suppl 1:409-16.5. Rayment R, Brunskill SJ, Stanworth S, <i>et al.</i> Antenatal interventions for fetomaternal alloimmune thrombocytopenia. <i>Cochrane Database Syst Rev</i> 2005; (1):CD004226.