Diagnosis and management of FETAL ANEMIA

(Essay)
Submitted for Partial Fulfilment of Master Degree in Obstetrics and Gynecology

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To the memory of

my father

and

my sister

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بِسْمِ اللَّهِ الرَّحْمَنِ الرَّحِيمِ

قَالُوا سُبْحَانَكَ لَا عِلْمَ لَنَا إِلَّا مَا عَلَّمْتَنَا
إِنَّكَ أَنتَ الْعَلِيمُ الْحَكِيمُ

صدق الله العظيم

سورة البقرة الآية 32

DIAGNOSIS AND MANAGEMENT OF INTRAUTERINE FETAL ANEMIA

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INTRODUCTION

Fetal anemia is defind as hematocrit or hemoglobin conecentration >2SD below the mean for gestational age.(Harrington and Fayyad 2002)

With the dawn of the new millennium , medical science has made little impact on the major complication of pregnancy .The one notable exception is rhesus alloimmunization and its associated fetal / neonatal consequence. (Lokeshwar et al 2003)

Antenatal serology screening and the widespread use of anti-D immunoglobulin has dramatically reduced the incidence of immune anemia . (Kumpel 2002)

Consequently, less common causes,such as parovirus infection ,are now becoming relatively more common causes of this serious condition.

Despite these developments, fetal anemia is an important cause of perinatal morbidity and mortality. The following facts remain an true: fetal anemia can be caused by immune, non-immune and idiopathic causes and up to 50% of patients referred with red blood cell antibodies have those directed against an antigen other than D. (Lehmann et al 2003)

Etiological factoer of fetal anemia can be caused by immune, non immune,and idiopathic causes . Among the immune causes, anti-D Rhesus antibodies are the most common . The administration of the anti -D Ig to all pregnant women at risk has dramatically decreased the incidence of Rh

–hemolytic disease . However,the use of anti -D has not eliminated the problem of alloimmunization ,since more than 50 Red blood cell irregular antigens will continue to be a problem .Currently, there are no routine method to measure the levels of non-D antibodies, and even the titres of these antibodies are not reliable predictor of the severity.In addition, immunoprophylaxis is not available to prevent these causes .(Moise 2002)

Non-immune causes of fetal anemia include hemolytic causes (alpha-thalassemia,red blood cells enzymes and membrane defects, microangiopathic and others), aplastic causes (parvovirus B-19 infection, other congenital infections,Diamond -Blackfan anemia, Fanconi s anemia and others) and hemorrhagic causes (FMH,FP twin-twin transfusion, chorioangioma, vasa previa and internal hemorrage) . Again, no routine accurate screening test exists, and the diagnosis is often late when hydrops has occurred . Accordingly in spite of the modern advancement in materno-fetal medicine, fetal anemia remains an important cause of perinatal mortality and morbidity .(Leung etal 2002)

Diagnostic approaches : Initially, the diagnosis in case of Rh isoimmunization begins with past obstetric history and maternal antibody titre measurement . If the titre is negative ,it should be repeated monthly up till the time of delivery ,and the woman given anti-D Ig. On the other hand, once the critical level of antibody titre is exceeded, the patient should be regarded at risk and other forms of fetal evaluation are needed . The diagnosis of other causes of fetal anemia depends on the

underlying etiology e. g. fetal and maternal DNA samples are used to diagnosis alpha-thalassemia, and parvovirus infection is diagnosed by detection of its DNA in maternal orfetal tissues using the PCR technique .(Opkes 2000)

Noninvasive tests (ultrasound assessment and fetal Doppler measurement of fetal circulation) to predict fetal anemia are of value not only in avoiding unnecessary invasive procedures but also in deciding on the appropriate timing of itervention .(Roberts et al 2002)

Doppler blood velocity studies (especially fetal middle cerebral artery –of peak systolic velocity) appear to be the most valuable single noninvasive test .When sonographers are appropriately trained .(Zimmerman et al 2002)

Therapeutic Modalities : intrauterine transfusion is the most effective treatment in the management of most causes of fetl anemia . In cases of previous perinatal loss in the early second trimester Intravenous Immunoglobulin alone or in combination with plasmapheresis may enable the fetus to reach a gestation at which intravenous transfusion becomes feasible

Possible future advances in therapy include selective immunotherapy to block or suppress maternal anti-red cell antibodies .

(Marie et al 2004)

Aim of work : spots lights on these types of fetal anemia and trials of the intervention or prevention .

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