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## INTERNATIONAL JOURNAL OF ADVANCED RESEARCH (IJAR)

Article DOI: 10.21474/IJAR01/18401

DOI URL: <http://dx.doi.org/10.21474/IJAR01/18401>



### RESEARCH ARTICLE

#### A CASE REPORT OF MYELOMENINGOCELE WITH ARNOLD CHIARI MALFORMATION II- HIGHLIGHTING THE IMPORTANCE OF ANEMIA MUKTH BHARATH PROGRAMME

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#### Manuscript Info

##### Manuscript History

Received: 10 January 2024

Final Accepted: 14 February 2024

Published: March 2024

##### Key words:-

Arnold Chiari Malformation II, Folate deficiency, Anemia Mukth Bharath Program

#### Abstract

**Introduction:** Neural tube defects are common complex congenital malformations resulting from failure of neural tube closure during embryogenesis, which usually completes by 28 days post conception. Myelomeningocele is almost always associated with Arnold Chiari Malformation II (CM II) and vice versa.

**Aims & Objectives :** As most of the neural tube defects can be prevented by pre-conceptional folate supplements, we would like to highlight the importance of proper implementation and utilization of "Anemia Mukth Bharath Programme".

**Background:** Neural tube defects (NTDs) are caused by a combination of multiple genes and multiple environmental factors like folic acid deficiency, insulin dependent diabetes, obesity and certain medications which interfere with folate metabolism. One of the beneficiaries under the Anemia Mukth Bharath programme are women in the reproductive age group in the pre-conception period and up to the first trimester of the pregnancy. They are advised to have 400 mcg of Folic Acid tablets, daily, to reduce the incidence of neural tube defects in the fetus. Case report :We present a case of Chiari malformation associated with megaloblastic anemia with an attempt to highlight the importance of proper utilization of national program for prevention of iron and folate deficiency in women of reproductive age group.

**Clinical relevance :** Neural tube defects are largely preventable anomalies by simple and effective management of folate deficiency preconceptionally.

**Conclusion :** Proper utilization of the Anemia Mukth Bharath program which is available to the beneficiaries at their doorstep can not only prevent maternal anemia but also prevent fetal loss due to NTD.

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#### Introduction:-

Neural tube defects are common complex congenital malformations resulting from failure of neural tube closure during embryogenesis, which usually completes by 28 days post conception, i.e., 6 weeks of gestation. Arnold Chiari Malformation II is relatively common, with an incidence of 1 in 1000 live births. It is characterized by hypoplastic posterior fossa and hind brain secondary to open neural tube defect, that is myelomeningocele. There is protrusion of cerebellum and brain stem into foramen magnum and partial or complete agenesis of cerebellar vermis.

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Hydrocephalus is also a common association of CM II. The exact etiology of the malformation is yet to be found out. Treatment of the defect is complex due to the variety and variable severity of malformations. This is associated with high neonatal morbidity and mortality in spite of multidisciplinary team approach.

#### **Case Report:-**

A 27 year G3P2L2 at 22 weeks gestation, from low socio-economic status, was referred to government general hospital from private clinic, with a diagnosis of Arnold Chiari II malformation and lumbar myelomeningocele in the fetus on TIFFA scan. She was a case of moderate anemia (Hb 8 gm%) and dimorphic picture including microcytes and megaloblasts was identified on peripheral smear. She had a short spacing of one and a half year between successive pregnancies and she had taken iron and folic acid (IFA) supplements irregularly during every pregnancy. She had never taken IFA supplements in postnatal period. Her body mass index and glucose tolerance test results were in normal range. Keeping in view, the poor neonatal prognosis, they opted for mid trimester termination of pregnancy and the same was carried out uneventfully after improving her Hb to 9gm with one unit of packed red blood cell transfusion. Her serum vitamin B12 levels were found to be within normal range. Red cell folate estimation, which is the diagnostic test of choice to confirm folate deficiency as the cause for megaloblastic anemia, could not be done due to financial constraints. She was counselled for contraception and discharged on therapeutic dose of oral Iron and Folic acid of 1mg/day with an advise to follow up after 3 weeks.

#### **Discussion:-**

Neural tube defects (NTDs) are caused by a combination of multiple genes and multiple environmental factors like folic acid deficiency, insulin dependent diabetes, obesity and certain medications which interfere with folate metabolism. Folate is an important co factor in methylation pathway of homocysteine to methionine, which in turn plays a vital role in normal closure of neural tube. Incidence of folate deficiency depends on the socio-economic status and nutrition of the population. Only 3-4% of women with anemia during pregnancy have megaloblastic anemia. In majority of these women, folate deficiency is the etiology, as vitamin B12 is found abundantly in meat, fish, poultry and dairy products. Vitamin B12 deficiency results from poor absorption due to autoimmune gastritis or auto-antibodies against gastric intrinsic factor. Folic acid though present abundantly in fruits, green leafy vegetables and meat, deficiency may result from prolonged cooking which can destroy the vitamin, or inadequate intake, acidic intestinal pH or increased utilization. Generally, serum folate levels <2 ng/mL are considered deficient, while levels >4 ng/ml are considered as normal. Borderline levels between 2 to 4 ng/mL warrant further confirmation by measurement of methylmalonic acid (MMA) and homocysteine levels. Folate deficiency can be confirmed with a normal B12 and MMA level and elevated homocysteine levels, while vitamin B12 deficiency can be confirmed with elevated MMA and homocysteine levels and low B12 levels [1]. RBC folate levels are a very useful index of body stores.[2][3].

Our patient is likely to have folate deficiency, keeping in view her multiparity with short spacing and inadequate iron folate supplement intake in earlier pregnancies and postpartum. The Anemia Mukth Bharat strategy has been designed to reduce prevalence of anemia by 3 percentage points per year among children, adolescents and women in the reproductive age group (15–49 years), between the year 2018 and 2022. The baseline National Family Health Survey 2014 (NFHW) revealed a prevalence of anemia of 53%, 50%, 58% respectively among women of reproductive age group, pregnant and lactating women respectively. Anemia reduction targets for 2022 were to cut down prevalence to 35%, 32% and 40% in the respective categories. Provision of prophylactic Iron Folic Acid supplementation to children, adolescents, women of reproductive age and pregnant women, irrespective of anemia is a key continued intervention under Anemia Mukth Bharat. In women of reproductive age (non-pregnant, non-lactating); between 20–49 years, IFA tablet is provided weekly once, each tablet containing 60 mg elemental Iron + 500 mcg Folic Acid. For Pregnant women and lactating mothers (of 0–6 months child) IFA tablet is provided once daily, starting from the fourth month of pregnancy (that is from the second trimester), continued throughout pregnancy (minimum 180 days during pregnancy) and to be continued for 180 days postpartum. Further, women in the reproductive age group in the pre-conception period and up to the first trimester of the pregnancy are advised to have 400 mcg of Folic Acid tablets, daily, to reduce the incidence of neural tube defects in the fetus.[4]

#### **Conclusion:-**

Proper utilization of the Anemia Mukth Bharath program which is available to the beneficiaries at their doorstep can not only prevent maternal anemia but also prevent fetal loss due to NTD.

**References:-**

- 1.Green R, Datta Mitra A. Megaloblastic Anemias: Nutritional and Other Causes. Med Clin North Am. 2017 Mar;101(2):297-317.
- 2.Okada A, Koike H, Nakamura T, Watanabe H, Sobue G. Slowly progressive folate-deficiency myelopathy: report of a case. J Neurol Sci. 2014 Jan 15;336(1-2):273-5.
- 3.Reynolds EH. The neurology of folic acid deficiency. Handb Clin Neurol. 2014;120:927-43.
- 4.Anemia Mukth Bharath portal.