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Research Paper

Medical Science

KEYWORDS :

A Case Study of Rare Case of Fanconi Anemia

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ABSTRACT

FA is a rare autosomal recessive disease characterized by congenital abnormalities, defective haematopoisis and a high risk of developing acute myeloid leukemia, myelodysplastic syndrome and cancers. Diagnosis is based on morphological abnormalities, haematological abnormalities and genetic tests. We report a case of FA in a 3 and ½ year old female child presenting with pallor and pancytopenia.

Case report:

Our patient was 3 and ½ year old, 1st order female child born out of non consangious marriage. Patient sent from pediatric surgery department for low haemoglobin, low total leucocyte and low platelet counts with provisional diagnosis of pancytopenia in an operated case of recto- vaginal fistula. Patient has been operated for recto-vaginal fistula, ileostomy has been performed before 6 months.Patient has been given pcv before surgery for low hemoglobin. After surgery patient started on hematinics and multivitamins. On serial hemogram Patient has decreased hemoglobin as well total leucocyte count and platelets despite of micronutrients and haematinics supplements therapy going on and no other significant history of blood loss. Patient admitted in v.s.g.h. pediatric department.

On examination patient look pale. Patient has short stature with microcephaly. Hypopigmented patches over face present. Bilateral hypoplastic ear present.small eyes with epicanthal folds anomalies present . Patient has a broad nasal base. Patient has both upper limb thumbs hypoplasticand attached with short threads.No any bleeding menifestation present.

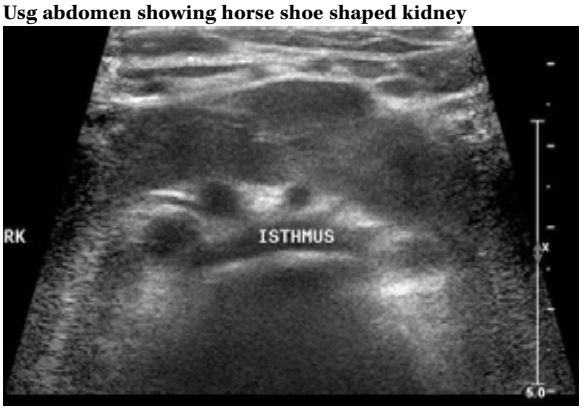
Patient having broad nasal bridge , epicanthalfolds anomalies, Hypopigmented patches over face.

Patient with hypoplasticthumb.

On further, expert ultrasound abdomen done suggesting of horse shoe shaped kidney. Detailed peripheral smear done suggestive of pancytopenia with possibility of bone marrow failure. Meanwhile 2d echo done for murmurs, suggestive of tricuspid regurgitation. Bone marrow biopsy and aspiration cytology advised to confirm bone marrow failure and to check for leukemia changes. As aspiration cytology and bone marrow biopsy is not possible in our set up patient sent to higher centre.

Patient was managed as indoor patient, antibiotic therapy was given for low grade fever and after a fever free period of 1 week corticosteroid started for 3 weeks with haematinics and micronutrients as supportive measure.

Usg abdomen showing horse shoe shaped kidney



Discussion:

Fanconianemia is primarily inherited in an autosomal recessive manner. It occurs in all racial and ethnic groups. Patients with FA may have 1.typical physical anomalies with normal haematological findings; 2. Normal physical features but abnormal haematological findings; 3. Physical anomalies and abnormal haematological findings. There can be sibling discordant in clinical and haematological findings, even in monozygotic twins. Approximately 75% of patients are 3-14 years of age at the time of diagnosis.

Patients have abnormal chromosome fragility. Increased marrow cell apoptosisoccurs. An inability of FA cells to remove oxygen free radicals, resulting in oxidative damage is a contributing factor in pathogenesis.

Marrow failure usually ensues in the first decade of life. Thrombocytopenia often appears initially, with subsequent onset of granulocytopenia and then macrocytic anemia. The marrow becomes progressively hypocellular and fatty as in severe acquired aplastic anemia.

Diagnosis is confirmed with a chromosomal breakage study using DEB.Association with abnormal haematological findings and physical anomalies - In our case diagnosis is based on abnormal haematological findings and physical anomalies.

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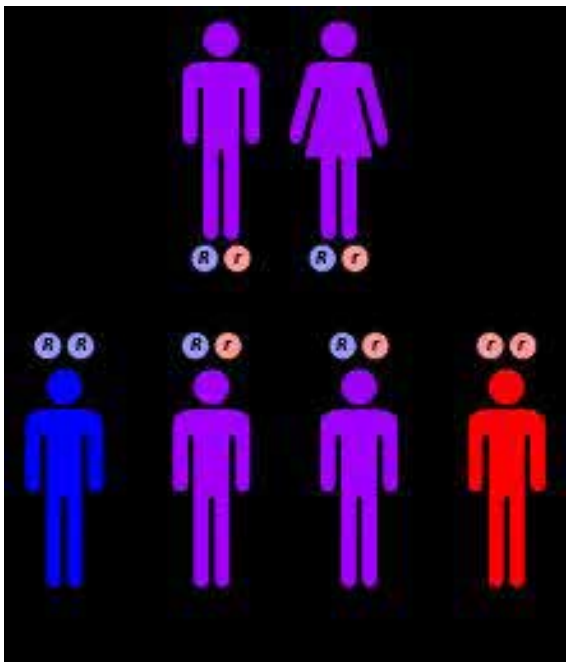
Autosomal recessive pattern (uncommon form is X-linked recessive).



Characteristic physical anomalies in FA

Frequency of abnormalities in FA

Abnormality	Frequency (%)
Skeletal (radial ray, hip, vertebral scoliosis, rib)	71
Skin pigmentation (café au lait, hyper- and hypopigmentation)	64
Short stature (median height 5th %ile)	63
Eyes (microphthalmia)	38
Renal and urinary tract	34
Male genitalia	20
Mental retardation	16
Gastrointestinal (eg, anorectal, duodenal atresia)	14
Cardiac abnormalities	13
Hearing	11
Central nervous system (eg, hydrocephalus, septum pellucidum)	8
No abnormalities	30

Tischkowitz, M D et al. J Med Genet 2003;40:1-10 (taken from Dokal, 2000)

Treatment

A hematologist and a multidisciplinary team should supervise patients with FA. If the haematological findings are stable no transfusion is required. If growth velocity is below expectations, endocrine evaluation is needed. Blood counts should be performed every 1-3 months; bone marrow aspiration and biopsy are indicated annually for leukemia and MDS surveillance.

HSCT is the only curative therapy for haematological abnormalities. Patients <10 year old with FA who undergo transplantation using an HLA- identical sibling donor have a survival rate >80%.

G-CSF can usually induce an increase in the absolute neutrophil count and occasionally platelets and haemoglobinlevels. Although most patients lose the response after 1 year owing to progression of marrow failure.

Androgens produce a response in 50% patients, heralded by reticulocytosis and a rise in haemoglobin within 1-2 months. WBC counts may increase next followed by platelets. Potential side effects include musculinization, elevated hepatic enzymes, cholestasis, liver tumours.

The premise for gene therapy in FA is under investigation. Encouraging preclinical data from studies offer hope that gene therapy will be a safe and effective treatment for FA.

CONCLUSION :

FA is a heterogeneous condition presents with haematological abnormalities and multiple physical anomalies. Which maylead to aplastic anemia, leukemia and MDS ,growth delay, endocrinological abnormalities, solid tumours at older age. Early diagnosis and treatment with careful surveillance for known complications especially cancer and prompt intervention on their detection can contribute to improved survival.

Ethical Clearance: This study has been conducted smt. NHL MMC and V.S. General Hospital, Ahmedabad. This study had been done originally by us after consent from parents of patient and approval from ethics committee. written informed consent was obtained from patient's parents for publication of this case, reports and any accompanying images. we ensuring that, this study manuscript has not been submitted and published elsewhere.

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Bibliography:

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AR:autosomal recessive
AML:acute myeloid leukemia
MDS: myelodysplastic syndrome
PCV:packed cell volume
USG:ultra sono-graphy
2D ECHO: 2 dimensional echocardiography
DEB: diepoxybutane
HSCT: haematopoietic stem cell transplantation
G-CSF: granulocyte colony-stimulating factor
HLA: human leukocyte antigen
WBC: white blood cells