Picture This
Imaging & Beyond by Jankharia

INNER SPACES

Edited by Dr. Bhavin Jankharia

RNI No.: MAHENG/2006/17782
Regd. No.: MCS/022/2015-17
WPP No.: MR/Tech/WPP-174/South/2016

Dec 2016 | Vol. 16 | No.12
Published: 7th of every month | Subscription Price: Rs. 10
Posted at Mumbai Patrika Channel Sorting Office Mumbai 400 001 on 9th of Every Month

Usefulness of CBC in the Diagnosis of beta Thalassemia Trait (BTT)

Dr. S. Poornakala, Consultant Pathologist. Picture This by Jankharia

Routine CBC		
WBC		9.38
RBC	H	6.68
HGB		13.0
HCT		40.7
MCV	L	61.0
MCH	L	19.4
MCHC	L	31.9
CHCM	L	30.8
CH		18.6
RDW	H	15.6
HDW		2.88
PLT		228
MPV	L	7.1

Fig.1A

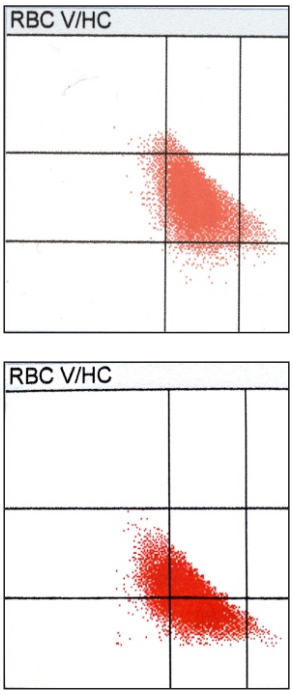

Fig.1B

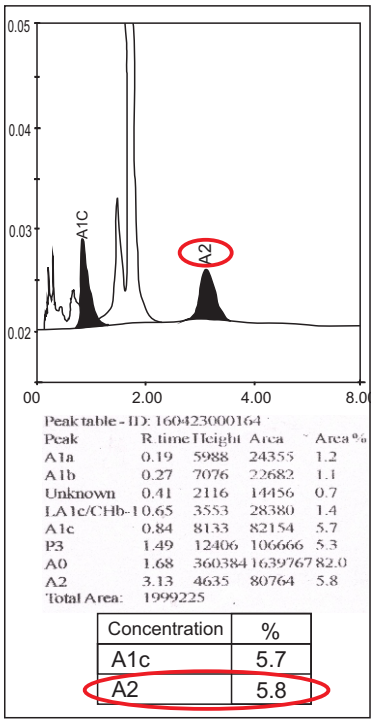

Fig.1C

Fig. 1 (A-C) Patient with BTT. Typical CBC values are seen (A) with a normal RBC graph (top image in B) versus a comma shaped RBC graph of BTT (bottom image in B). The HPLC chromatogram (C) shows an elevated A2

Usefulness of CBC in the Diagnosis of beta Thalassemia Trait (BTT)

Beta-thalassemias are a group of autosomal recessive, hereditary blood disorders characterized by abnormalities in the synthesis of the beta chains of hemoglobin. Three forms have been described: thalassemia major, intermedia and minor.

Thalassemia major individuals present in their early life with severe anemia, growth retardation, pallor, jaundice, hepatosplenomegaly, leg ulcers, and skeletal changes. They need regular transfusion therapy which can cause iron overload related complications including endocrine complication.

Thalassemia minor or beta thalassemia trait (BTT) is clinically asymptomatic but some subjects may have mild to moderate anemia.

Though thalassemia minor is clinically innocuous, its diagnosis is crucial because when both parents are carriers, there is a 25% risk at each pregnancy of having children with thalassemia major.

Usefulness of CBC in the Diagnosis of BTT

Picture This
Imaging & Beyond by Jankharia

At a glance

- Beta-thalassemia trait (BTT) is important to diagnose so that people are aware of the possible genetic risks in children
- A simple CBC can give pointers to possible BTT
- The diagnosis is made by Hb electrophoresis, which shows raised HbA2 levels and confirmed if necessary using genetic analysis.

Diagnosis

This is based on hematologic and molecular genetic testing.

① CBC - the basic investigation is an invaluable tool in diagnosing typical cases of BTT (Fig. 1A).

The informative parameters include

- Hemoglobin - 10-12 g/dl
- RBC count - usually > than 5.2 million/cu mm
- MCV - 65-80 fl
- MCH - 20-25pg
- MCHC - nearly normal
- Red cell Distribution Width (RDW) - this parameter is useful to distinguish BTT from iron deficiency anemia (IDA), which is the commonest differential diagnosis for a microcytic hypochromic blood picture. This parameter which indicates the degree of anisocytosis, is increased in IDA, whereas it is normal/near normal in BTT.

② Mentzer index. This is defined as mean corpuscular volume per red cell count. An index value less than 13 suggests thalassemia trait and more than 13 suggests iron deficiency.

③ Cell counters like Advia provide graphs (Fig. 1B) that is very useful in suggesting the diagnosis.

④ Iron studies and ferritin levels are usually normal and hemoglobin electrophoresis reveals increase of HbA2 levels (4-8%) (Fig. 1C).

⑤ The pitfalls in carrier identification are coexistent iron deficiency, coexistent alpha thalassemia, delta thalassemia, and silent carriers.

⑥ **Confirmation of diagnosis is done by molecular genetic analysis.**

Subscribe to INNER SPACES : info@jankharia.com
Online version : http://picture-this.in/index.php/inner-spaces/

Main Clinic
383 | Bhaveshwar Vihar | Sardar V. P. Road | Prarthana Samaj | Charni Road | Mumbai 400 004 | **T:** 022 66173333 | **F:** 022 2382 9595

Cardiac, Chest & Interventional CT
461 | Nishat Business Centre | Arya Bhavan | Sardar V. P. Road | Mumbai 400 004 | **T:** 022 2380 2172 | 022 2389 3551 / 2

PET / CT, Organ Optimized 3T MRI
Gr. Floor | Piramal Tower Annexe | G. K. Marg | Lower Parel | Mumbai 400 013 | **T:** 022 6617 4444

Owner, Printer & Publisher: Dr. Bhavin Jankharia
Published at: Dr. Jankharia's Imaging Centre
Bhaveshwar Vihar, 383, S.V.P. Road, Prarthana Samaj, Charni Road, Mumbai 400 004.