Thalassemia; Chronic ESR Caused by Entamoeba Histolytica/ Giardia Lambia Leads to Imbalance in α- β Globin Chains Synthesis and Aplastic Anemia

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Thalassemia is a blood disorder of α- β globin chain synthesis of HbA, simultaneouslychildrenseffected by thalassemia are also infected by Entamoebahistolytica / Giardia Lambiaand this infection is from G I tract to bone marrow that causes high chronic ESR.

Infection of Protozoa (*Entamoebahistolytica / Giardia Lambia*) causes production of inflammatory mediators that leads to increased chronic ESR, high ESR in infants and children effects every part of body including the site of origin of RBCs i.e RBC precursors, inflammation of RBC precursors causes expanding of mass of red cells precursors that erodes the cortex that impairs bone growth and finally ineffective erythropoiesis, chronic high ESR reflects severity of inflammation that diminished survival of RBC precursors.

Chronic high ESR effects RBC precursors interms of causative mutation mostly consisting of point mutations, the mutations reduce transcription proportionally, high ESR prevents production of normal β – globin mRNA and α- globin mRNA resulting in β0- β+ thalassemia and α-thalassemia respectively.

It is seen in retrospective study that all thalassemic patients are suffering from *Entamoebahistolytica / Giardia Lambia* with high chronic ESR,Stool examination and ESR testing confirms that all Thalassemic patients carries cysts of *Entamoebahistolytica / Giardia Lambia*with high ESR (before blood transfusion), proper and careful treatment of *Entamoebahistolytica / Giardia Lambia*with Metronidazole/ Tinidazole + Diloxinidefurate ± quinolone leads to reduction of ESR, reduction of ESR leads to effective erythropoiesis results improvement of HbA.

It is unfortunate that most of pathologies gives negative report of *Entamoebahistolytica / Giardia Lambia* in stool examination hence selection of pathology plays crucial role in accurate diagnosis and confirmation.

CONCLUSION

Treatment of *Entamoebahistolytica / Giardia Lambia*in thalassemia with Metronidazole/Tinidazole + Diloxinidefurate ± quinolone leads to improvement of effective erythropoiesis.

Thalassemia
(MOA)
Entamoebahistolytica /Giardia lambia infection
(G.I Tract to Bone marrow)
↓
Release of inflammatory mediators
↓
Chronic rise of ESR
↓
Chronic inflammation of whole body including bone marrow
↓
Less or diminished production of RBC and their precursors
↓
chronic high ESR causes point mutations
Imbalance in α- β globin synthesis
↓
Unpaired α &β-globin chains precipitate within red cells precursors
↓
Red cell precursors succumb to membrane damage & undergo apoptosis
↓
Ineffective erythropoiesis
↓
Thalassemia

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Treatment of Thalassemia
(MOA)
Entamoebahistolytica /Giardia lambia infection
[GI Tract to Bone marrow]

Treatment ↓↔ Metronidazole/tinidazole +Diloxinidefurate ± quinolone
Reduction of inflammatory mediators
↓
Reduction of chronic ESR
↓
Reduction of inflammation of bone marrow(red cell precursors)
↓
Effective erythropoiesis

Note: Intravenous therapy is more effective in reducing chronic ESR as compare to orals.

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