2 REVIEW OF LITERATURE

2.1 Thalassemia in 19th Century

Von Jaksh (1889) described an anemia accompanied by splenomegaly and leucocytosis which he gave the name ‘Anaemia infantum pseudoleucaemica’, this was subsequently called “Jaksch- Hayem-Luzet’s” anemia after the names of the authors.

2.2 Thalassemia in 20th Century

In 1925, Thomas Cooley, a Detroit pediatrician, described a severe type of anemia in children of Italian origin. He noted abundant nucleated red blood cells (RBCs) in the peripheral blood, which he initially thought was erythroblastic anemia, an entity that Von Jaksh (1889) described earlier. Although Cooley was aware of the genetic nature of the disorder, he failed to investigate the apparently healthy parents of the affected children. Rietti (1925) focused on an account of primary hemolytic icterus. Cooley (1927) further refined his concepts on erythroblastic anemia. Cooley et al. (1927) studied the Anemia in children with splenomegaly and peculiar changes in the bones. Whipple and Bradford (1932) reported the first complete autopsy with Cooley’s anemia in which they called attention to excessive pigment deposition in many organs; they first suggested the term thalassemia. Studied the Mediterranean disease – thalassemia and associated pigment anomalies simulating hemochromatosis was studied by Whipple and Bradford (1936). Caffey (1937) had hypothesized that mild cases can reach adult life and transmit the diseases. Caminopetros (1938) pointed that the disorder was transmitted as a Mediterranean recessive. He also proposed the existence of genetic carrier, as evidence by blood studies, fragility tests and mild roentgenographic changes. Valentine and Neel (1944) coined out the term “thalassemia major” and “thalassemia minor”. The presence of increased alkali resistant hemoglobin in patients with thalassemia and demonstrated increased fetal hemoglobin in thalassemia first studied by Vecchio (1946).

Sturgeon and co-workers (1952) demonstrated that patients with chronic hemolytic anemia associated with thalassemia and sickling trait. In 1955, Smith et al. his studies in Mediterranean (Cooley’s anemia) I. Clinical and hemato aspects of splenectomy with special reference to fetal hemoglobin synthesis. Sturgeon et al. (1955) pointed out the chronic hemolytic anemia associated with thalassemia and sickling trait. Sturgeon, et al (1955a) Searched and described intermediate types of thalassemia clinically, genetically and biochemical studies of intermediate type of Cooley’s anemia. Observations on the minor basic hemoglobin components in the blood of normal individuals and patients with


2.3 Thalassemia in 21st Century

Thalassemia study in Abroad


**Thalassemia study in India**


Newborn Screening in India is studied by Seema Kapoor and Madhulika Kabra (2010). In 2010, Balgir found the phenotypic diversity of sickle cell disorders with special emphasis on public health genetics in India. Singh et al., (2010) studied the effect of wheat grass tablets on the frequency of blood transfusions in Thalassemia Major.

2.4 Transfusion transmitted Diseases

Orofacial complications in thalassemia


Malaria in thalassemic patients

Nittis and Spiliopulos (1937) Studied that Mediterranean anemia may be a peculiar form of malaria. A selective advantage for survival in individuals with the thalassemia trait in regions where malaria is endemic. The RBCs of patients with Hb H disease have also shown a suppressive effect on the growth of the parasites. This effect is not observed in α thalassemia trait. Fawdry (1944) his studies focused on conducted Greeks and on Cyprus concluded that malaria played no part in the causation of disease.

Allen et al. (1997) studied the alpha -thalassemia protects children against disease caused by other infections as well as malaria. Weatherall (1997) observed the correlation of the thalassemia and malaria. Aluoch (1997) observed the higher resistance to *Plasmodium falciparum* infection in patients with homozygous sickle cell disease in western Kenya. The α⁺-thalassaemias are some of the best recognized malaria-protective polymorphisms. Flint et al. (1998) studied the population genetics of the haemoglobinopathies. Williams (1999) observes the mechanisms of malaria protection in the thalassemia syndromes.

Research involving both population and case-control studies has provided strong evidence that the high frequency of the milder varieties of alpha-thalassemia is related to protection against *P. falciparum* malaria (Weatherall and Clegg, 2002). Seed et al. (2005) reviewed the status and potential role of laboratory testing to prevent transfusion-transmitted malaria. Williams et al. (2005) observed the negative epistasis between the malaria-protective effects of alpha+-thalassemia and the sickle cell trait. Kitchen and Chiodini (2006) observed the blood transfusion transmitted malaria. Wambua et al. (2006) find out the effect of α⁺-thalassemia on the Incidence of Malaria and other diseases in children living on the coast of Kenya. May et al. (2007) studied the hemoglobin variants and disease manifestations in severe *P. falciparum*. Transfusion-transmitted infections like hepatitis B, C, HIV, malaria and syphilis studied by Hira et al, (2011).
Hepatitis/ Viral infections

Spleenectomy

Other diseases and complications