

**Pyruvate kinase deficiency -PK-:** Pyruvate kinase (PK) is a key regulating enzyme of the glycolytic pathway involved in the production of ATP (metabolic energy). Red blood cell PK deficiency is the most frequent enzyme disorder leading to chronic nonspherocytic haemolytic anaemia. Patients display a highly variable degree of severity. About 200 different gene mutations have been identified for this disorder. PK deficiency is transmitted in an autosomal recessive pattern.

#### **What causes the disease and how common is it?**

This is a genetic disease. It is linked to a mutation of the PK gene, encoding the PK enzyme. This mutation is leading to a reduction of PK activity in red blood cells, with normal PK activity in leukocytes or platelets. An individual can be heterozygous for the disorder (healthy carrier) when only one of the PK genes is mutated, or homozygous or compound heterozygous (affected individual) when the two PK genes are mutated. The estimated prevalence of PK deficiency is 51 cases (ie, homozygous or compound heterozygous patients) per million in the white population.

#### **What are the most frequent symptoms if I have the disease?**

The clinical picture varies from severe nonspherocytic haemolytic anaemia leading to neonatal death, to a well more or less compensated haemolytic anaemia with tiredness, icterus and pale skin. Some very severe PK-deficient cases are incompatible with life (hydrops fetalis). Hemolysis is often exacerbated during periods of infection.

#### **Which treatment must I follow if I have the disease?**

Supportive measures such as red cell transfusions in case of severe anaemia. In some cases spleen removal (splenectomy) may improve the anaemia and thereby patient's clinical situation.

#### **What is the risk of passing the condition on to my children?**

Two people who carry each one copy of one of the mutated PK gene have a 25 percent risk of having a child affected by the disorder at each pregnancy. The risk of having a child who is a healthy carrier of the disorder is 50 percent at each pregnancy, and the risk that a child will not have the disorder and will not be a carrier is 25 percent. Ask for genetic counselling to get a complete explanation.