

Poikilocytosis

Normal red blood cells are in the shape of a disk, thicker on the edge and thinner in the middle (biconcave).

The term poikilocytosis refers to a condition where 10% or more of the red blood cells are abnormally shaped due to other medical conditions. These cells may have point-like projections or may include shapes that are flat, elongated, teardrop, or in the shape of a sickle or crescent.

Symptoms of Poikilocytosis

Symptoms of poikilocytosis depend on the root medical condition. They often include signs that the body's tissues are not getting enough oxygen delivered by the red blood cells, such as:

1. Chronic fatigue
2. Weakness
3. Pale complexion
4. Difficulty breathing
5. Heart palpitations

Types and Causes of Poikilocytosis

Understanding the causes of poikilocytosis and starting treatment early requires knowing about the several types — or cell shapes. The common types are:

- ❖ Drepanocytes (sickle cells): sickle cell disease
- ❖ Spherocytes (sphere or round-shaped): autoimmune disorders, transfusion reactions, diseases of newborns, or snakebites
- ❖ Dacrocytes (teardrop cells): leukemia, megaloblastic anemia, or myelofibrosis
- ❖ Acanthocytes (spur cells): liver disease, kidney disease, thalassemia, autoimmune hemolytic anemia, or McLeod syndrome
- ❖ Schistocytes (fragmented, irregularly shaped cells): hemolytic anemias, burns, sepsis, and platelet disorders
- ❖ Elliptocytes (oval or elongated cells): iron deficiency, myelofibrosis, or megaloblastic anemia
- ❖ Codocytes (target cells): liver disease, iron deficiency, hemoglobin C disease, or spleen removal
- ❖ Echinocytes (burr cells): a deficiency of the pyruvate kinase enzyme, kidney disease, or cancer.

Diagnosis for Poikilocytosis

Poikilocytosis can be diagnosed using a blood-smear test. A complete blood count (CBC) test is the most common test for diagnosing a variety of underlying medical conditions including anemia and some cancers.

A blood sample is taken and sent to a lab for analysis. A result is normal when the cells have a normal appearance, and the count is within the normal range. An abnormal result occurs when the shape, color, or size of the red blood cells are not normal.

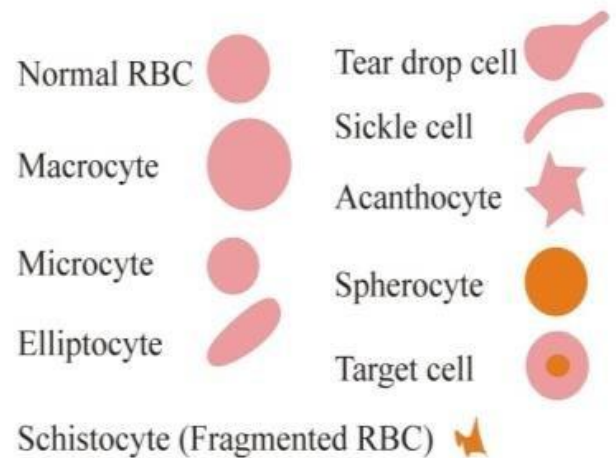
four-point scale indicates the percentage of cells affected:

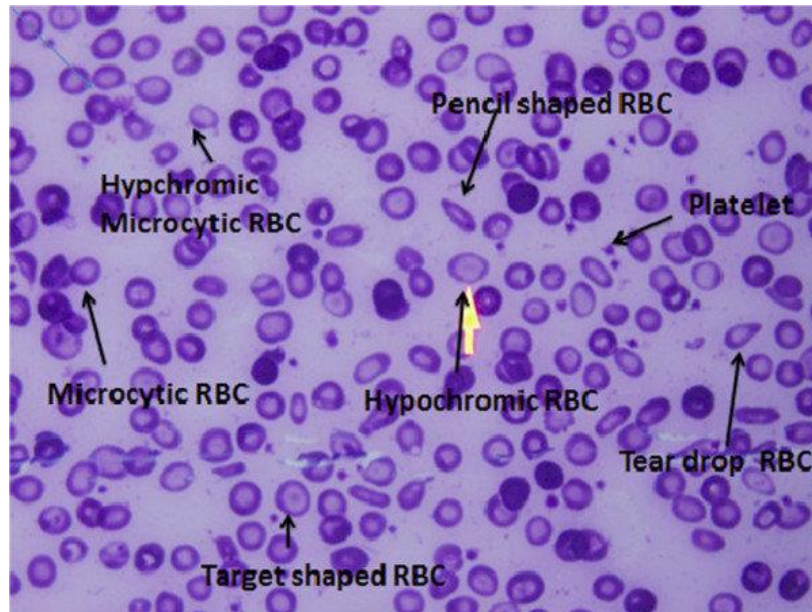
- 1 = 25%
- 2 = 50%
- 3 = 75%
- 4 = 100%

If the diagnosis is unclear, additional tests may be required. These may include a red blood count enzyme test, taking a bone marrow sample, isoelectric focusing, or a membrane protein test.

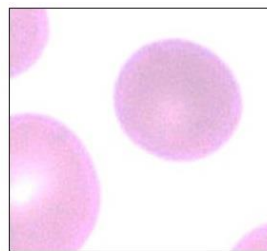
The three main types of anemia are iron deficiency anemia (the most common type), thalassemia, and anemia of chronic disease.

RED BLOOD CELL MORPHOLOGY					
Size variation	Hemoglobin distribution	Shape variation		Inclusions	Red cell distribution
Normal	Hypochromia 1+	Target cell	Acanthocyte	Pappenheimer bodies (siderotic granules)	Agglutination
Microcyte	2+	Spherocyte	Helmet cell (fragmented cell)	Cabot's ring	
Macrocyte	3+	Ovalocyte	Schistocyte (fragmented cell)	Basophilic stippling (coarse)	Rouleaux
Oval macrocyte	4+	Stomatocyte	Tear drop	Howell-Jolly	
Hypochromic macrocyte	Polychromasia (Reticulocyte)	Sickle cell	Burr cell	Crystal formation	
				HbSC	HbC

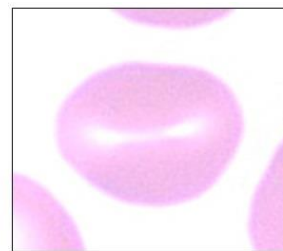




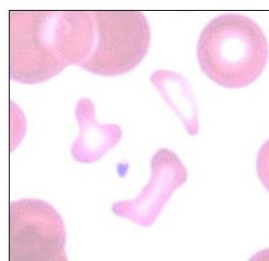
Elliptocyte



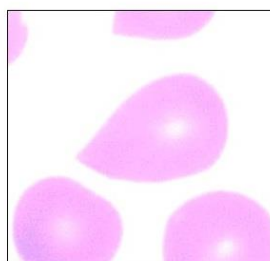
Spherocyte



Stomatocyte



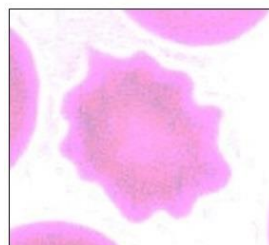
Schistocytes



Tear drop cell
(dacryocyte)



Sickle cell
(drepanocyte)



Burr cell
(echinocyte)



Spur cell
(acanthocyte)



Target cell
(codocyte)