

## Commentary

# A Short Note on Myelodysplastic Syndrome

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## 1. Description

Myelodysplastic syndromes are a collection of diseases caused by abnormally produced or functioning blood cells. Something wrong with the soft tissue that makes up the blood cells (bone marrow) in your bones causes myelodysplastic syndromes. Myelodysplastic syndromes are commonly treated with the goal of slowing the progression of the disease, reducing symptoms, and preventing consequences. Medications to promote blood transfusion and blood cell generation are common. In some situations, a bone marrow transplant, also known as a stem cell transplant, to replace your bone marrow with healthy bone marrow from a donor, may be considered.

### 1.1. Symptoms

At first, people with myelodysplastic syndromes may not show any signs or symptoms.

#### Myelodysplastic disorders can lead to the following complications over time:

- Fatigue.
- Shortness of breath.
- Unusual paleness (pallor), which occurs due to a low red blood cell count (anemia).
- Easy or unusual bruising or bleeding, which occurs due to a low blood platelet count (thrombocytopenia).
- Pinpoint sized red spots just beneath the skin that are caused by bleeding (petechiae).
- Frequent infections, which occur due to a low white blood cell count (leukopenia).

### 1.2. Causes

The bone marrow of a healthy person creates immature blood cells that mature over time. When this process is disrupted, the blood cells do not mature, resulting in myelodysplastic syndromes. Blood cells die in the bone marrow or after entering the bloodstream instead of growing properly. Over time, there are more immature, faulty cells than healthy cells, resulting in issues such as anemia (a lack of healthy red blood cells), infections (leukopenia) caused by a lack of healthy white blood cells, and bleeding. Platelets that aid in the coagulation of blood (thrombocytopenia). Most myelodysplastic syndromes have no known an etiology. Others are brought on by cancer therapies like chemotherapy and radiation, as well as hazardous substances like benzene.

### 1.3. Kinds of Myelodysplastic Syndromes

The World Health Organization classifies myelodysplastic syndromes into subtypes according to the type of blood cells, red blood cells, white blood cells and platelets.

#### Myelodysplastic syndrome subtypes include:

- Myelodysplastic syndromes with single line dysplasia. A blood cell type the number of



white blood cells, red blood cells or platelets is low and appears abnormal under a microscope.

- Myelodysplastic syndromes with multiline dysplasia. In this subtype, two or three blood cell types are uncommon.
- Myelodysplastic syndromes with ring side blasts. This subtype contains a small number of one or more blood cell types. A characteristic feature of red blood cells in the bone marrow is the presence of rings of excess iron.
- Myelodysplastic syndromes with isolated del (5 q) chromosome abnormalities. People with this subtype have a small number of red blood cells and the cells have a specific mutation in their DNA.
- Myelodysplastic syndromes with additional eruptions. In this subtype, any of the three types of blood cells may have low red blood cells, white blood cells, or platelets and be abnormal under the microscope. Most immature blood cells (blasts) are found in the blood and bone marrow.
- Myelodysplastic syndromes, unclassified. In this subtype, the number of mature blood cells of one or more types is reduced and the cells appear abnormal under the microscope. Sometimes blood cells appear to be normal, but analysis may find that the cells have DNA changes associated with myelodysplastic syndromes.

#### **1.4. Risk Factors**

##### **Factors that increase the risk of myelodysplastic syndromes:**

- Aging, most people with myelodysplastic syndromes are over 60 years old.
- Previous treatment with chemotherapy or radiation. Chemotherapy or radiation therapy, both commonly used to treat cancer, increase the risk of myelodysplastic syndromes.
- Exposure to certain chemicals. Chemicals, including benzene, have been linked to myelodysplastic syndromes.

#### **1.5. Complications**

##### **Complications of myelodysplastic syndromes include:**

- **Anemia:** Reduced numbers of red blood cells can cause anemia, which can make you feel tired.
- **Recurrent infections:** Having too few white blood cells increases your risk of serious infections.
- **Bleeding that won't stop:** Lacking platelets in your blood to stop bleeding can lead to excessive bleeding.
- **Increased risk of cancer:** Some people with myelodysplastic syndromes might eventually develop a cancer of the bone marrow and blood cells (leukemia).