



## Refractory Anemia with Ring Sideroblasts

**Authors:** Peter Maslak

**Category:** Myeloid Neoplasms and acute leukemia (WHO 2016) > Myelodysplastic Syndromes (MDS) > MDS with Ring Sideroblasts (MDS-RS)

**Number of Units:** 7

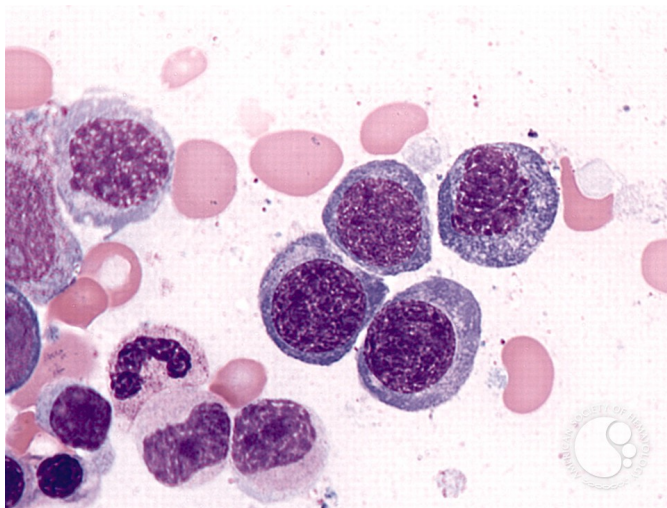
## Refractory Anemia with Ring Sideroblasts - 1.

**Image ID:** 2625

**Authors:** Peter Maslak

**Category:** Myeloid Neoplasms and acute leukemia (WHO 2016) > Myelodysplastic Syndromes (MDS) > MDS with Ring Sideroblasts (MDS-RS)

**Description:** Bone marrow aspirate is hypercellular with erythroid hyperplasia and prominent dyserythropoiesis.



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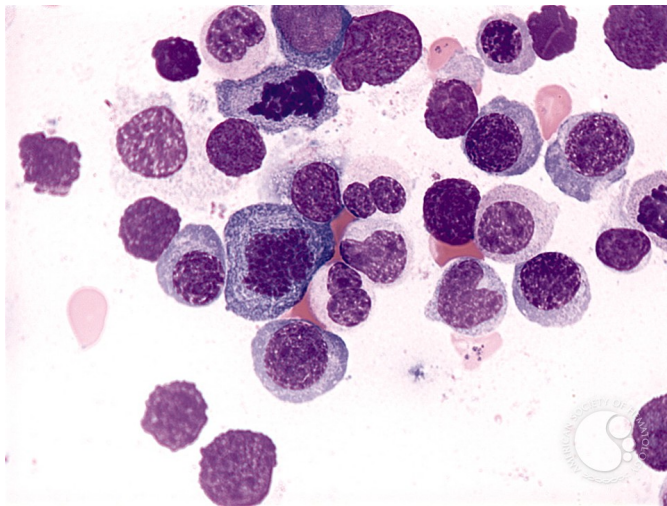
## Refractory Anemia with Ring Sideroblasts - 2.

Image ID: 2626

Authors: Peter Maslak

**Category:** Myeloid Neoplasms and acute leukemia (WHO 2016) > Myelodysplastic Syndromes (MDS) > MDS with Ring Sideroblasts (MDS-RS)

**Description:** Nuclear-cytoplasmic asynchrony is characteristic of dysplastic erythroid elements.



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## Refractory Anemia with Ring Sideroblasts - 3.

Image ID: 2627

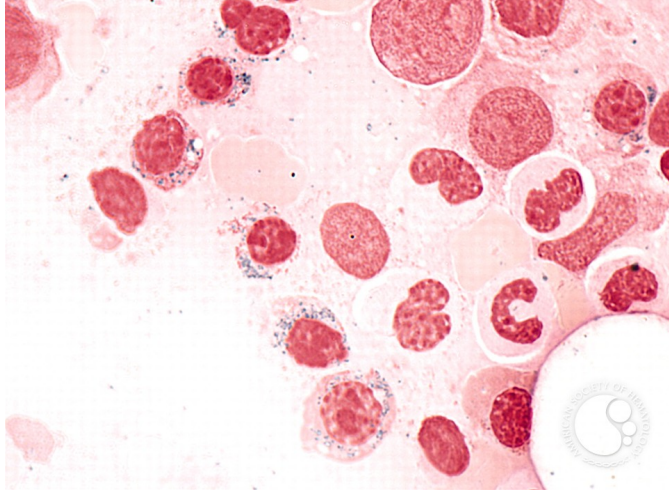
Authors: Peter Maslak

**Category:** Myeloid Neoplasms and acute leukemia (WHO 2016) > Myelodysplastic Syndromes (MDS) > MDS with Ring Sideroblasts (MDS-RS)



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**Description:** Prussian blue stain is used to identify ring sideroblasts.



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## Refractory Anemia with Ring Sideroblasts - 4.

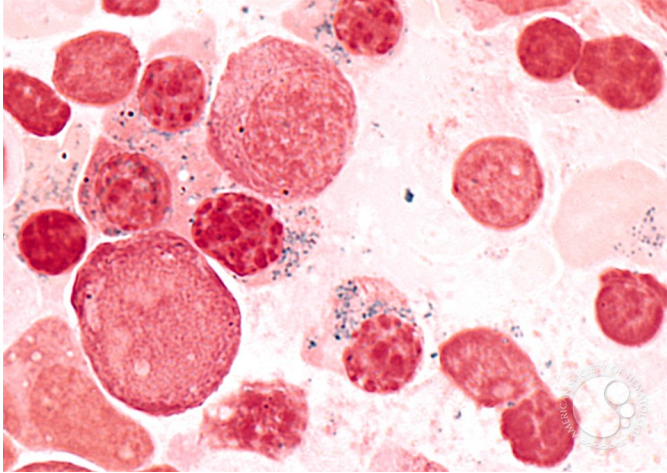
**Image ID:** 2628

**Authors:** Peter Maslak

**Category:** Myeloid Neoplasms and acute leukemia (WHO 2016) > Myelodysplastic Syndromes (MDS) > MDS with Ring Sideroblasts (MDS-RS)

**Description:** Iron may be distributed in the mitochondria in a typical "necklace" pattern around the nucleus or as large clusters within the cytoplasm.





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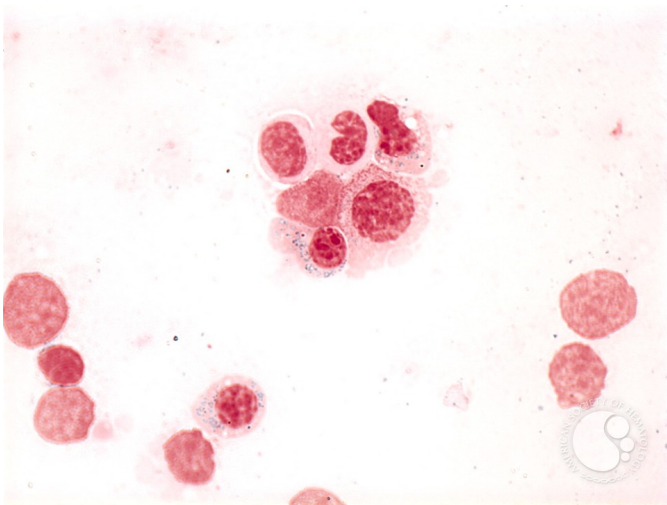
## Refractory Anemia with Ring Sideroblasts - 5.

Image ID: 2629

Authors: Peter Maslak

**Category:** Myeloid Neoplasms and acute leukemia (WHO 2016) > Myelodysplastic Syndromes (MDS) > MDS with Ring Sideroblasts (MDS-RS)

**Description:** Ring sideroblasts are formed by abnormal deposition of iron in the mitochondria surrounding the nucleus of red cell precursors.





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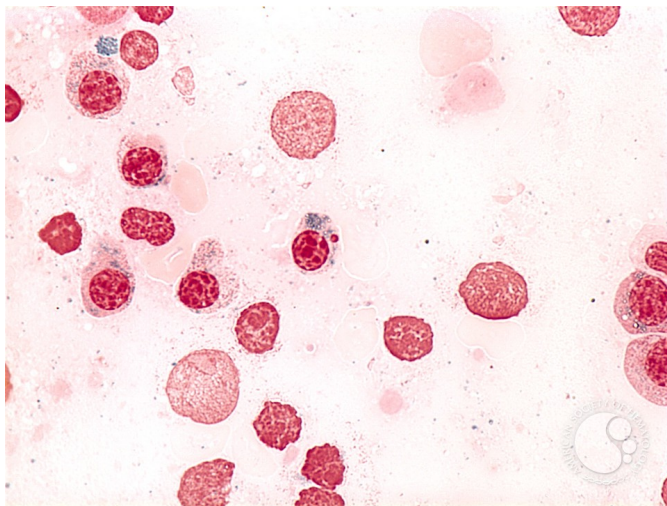
## Refractory Anemia with Ring Sideroblasts - 6.

Image ID: 2630

Authors: Peter Maslak

**Category:** Myeloid Neoplasms and acute leukemia (WHO 2016) > Myelodysplastic Syndromes (MDS) > MDS with Ring Sideroblasts (MDS-RS)

**Description:** Sideroblasts constitute greater than 15% of the erythroblasts.



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## Refractory Anemia with Ring Sideroblasts - 7.

Image ID: 2631

Authors: Peter Maslak

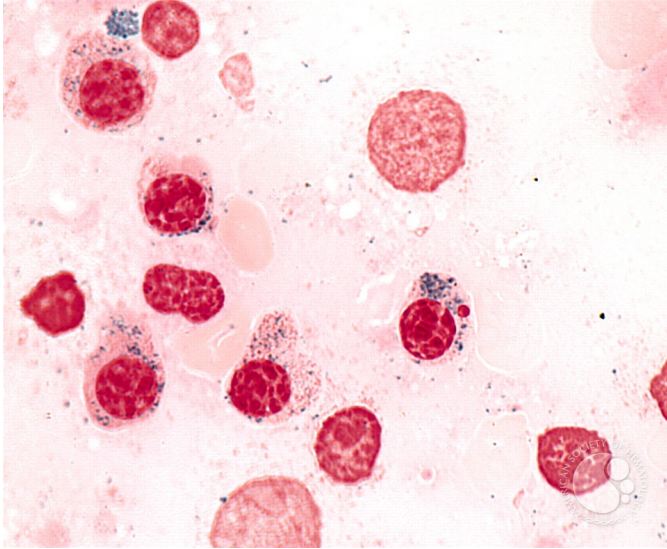
**Category:** Myeloid Neoplasms and acute leukemia (WHO 2016) > Myelodysplastic Syndromes (MDS) > MDS with Ring Sideroblasts (MDS-RS)





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**Description:** RARS accounts for approximately 15%-20% of the myelodysplastic syndromes.



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