



# Diamond Blackfan Anemia: Treatment & Remission

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# Remission

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- 568 patients enrolled in the DBAR
- 79 patients experienced a remission
- 71 patients were available for analysis
  - Male: female ratio for remission patients is 0.97:1
  - Median age at diagnosis: 3 m (range, 0 to 23.3 yrs)

Lee et al. Remission in Patients with Diamond Blackfan Anemia Appears to be Unrestricted by Phenotype of Genotype. Blood 112(11):3092, 2008

# Results

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- 73% entered remission while on steroid therapy
- 16% in remission while receiving both steroid and transfusion
- 8% in remission from chronic transfusion therapy

# Results

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- Median age of remission for all pts:  
5.7 years (range, 0.3 to 46.6 years)
  - males 5.8 years (range, 0.3 to 46.6 years)
  - females 4.8 years (range, 0.9 to 26 years)

# Results

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- Median duration of treatment to remission:  
3.1 years (range, 1 month to 37.6 years)
- Median duration of remission:  
11.5 years (range, 6 months to 48.1 years)
- The actuarial likelihood of entering remission is approximately 20% by 25 years of age

# Results

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- Remissions were observed in DBA patients or in affected family members with any RP mutation and in those with no known mutation

# Conclusions

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- Remission in patients with DBA is not an uncommon event.
- 55/71 of patients have durable remissions (median 11.5 years).
- The actuarial likelihood of entering remission is approximately 20% by 25 years of age.
- Steroid responsiveness is not a prerequisite for remission.
- The expression of a remission phenotype within multiplex families is quite variable.
- **Be on the lookout: New remission study through DBAR to update clinical characteristics and biology (blood samples) of remission in DBA this fall**

# Treatments for DBA

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- Transfusion therapy
  - Chronic red cell transfusion regimen
    - Start when Hb is less than 8 gm/dL
    - Transfuse 10-15 ml/kg every 3-4 weeks
    - Ideally transfuse until live vaccinations given (age 1)
    - May need to end earlier if venous access difficulty
    - If needs Port, please ask for a plastic one
  - **Goal: maintain adequate quality of life while maintaining growth**



# Treatments for DBA

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- Corticosteroid trial
  - Start after live vaccinations complete or sooner if venous access difficult
  - Prednisone equivalent of 2 mg/kg/day, usually given twice daily
  - Give Prednisone with Zantac or Prevacid to protect stomach
  - Begin ~2 weeks after a transfusion and continue for no more than 4 weeks if no response
  - Start Bactrim or Septra to prevent Pneumocystis pneumonia once response obtained

# Treatments for DBA

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- Corticosteroid therapy
  - If response noted then wean to 1 mg/kg/day over 2 months and then to 0.5 mg/kg/day or 1 mg/kg/every other day or lower

**Goal: Best response at the lowest dose possible**

- May need 3x/week or 2x/week
- Must be brave enough to wean, as patient might be in remission

# Treatments for DBA

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- Corticosteroid therapy
  - Watch growth!!!!
  - If falling off growth curve, or having pathologic fractures, need to consider a steroid hiatus
  - Consult endocrine for all patients, sooner if having growth issues

# Treatments for DBA

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- If no response to steroids then discontinue – do NOT increase dose
- Resume transfusion therapy
- Maintain growth

## Goal:

- Hb 10 for <1 year of age
  - Hb 9-10 for ages 2-16 yrs
  - Hb 10 for adults
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- At 10-15 transfusions, begin chelation therapy

# Treatments for DBA

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- Chelation therapy
  - After age 2, begin Exjade at 20-40 mg/kg/day
  - When able, begin Jadenu at 14-28 mg/kg/day
  - If ferritin not decreasing, may need to consider Desferal therapy
  - Once able, obtain MRI T2\* to check heart and liver iron load
  - Consider liver biopsy if liver iron concentration is high or possible SCT
  - If iron overload high, start Desferal at 50-60 mg/kg/day over 10-12 hours/day subcutaneously
  - If too high, need to give Desferal 24 hrs/day intravenously
    - More with Dr. Wolfe tomorrow

# Iron overload in a patient with Diamond Blackfan anemia

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## Prior to death

## Autopsy

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|--|-------------------|
| • Ferritin 4100 $\mu\text{g/L}$<br>(acceptable <1000-1500) |                   |
| • LIC – 9.7 mg/gram dry weight<br>(acceptable 3-7)         | 30.34 mg/gram dry |
| • T2* 12 milliseconds<br>weight<br>(acceptable 20-25)      | 9.24 mg/gram dry  |

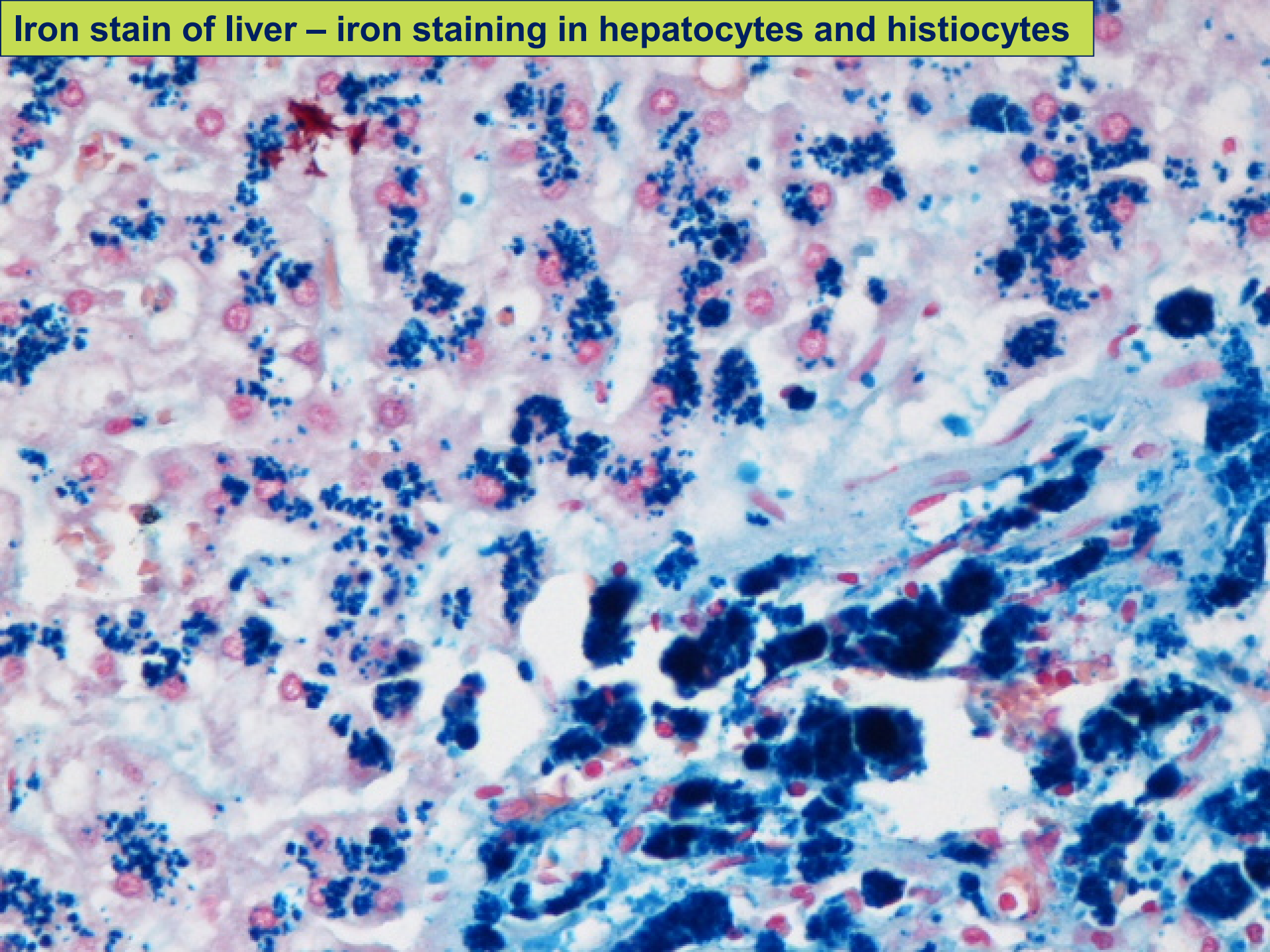


**Liver with iron overload**



**Normal liver**

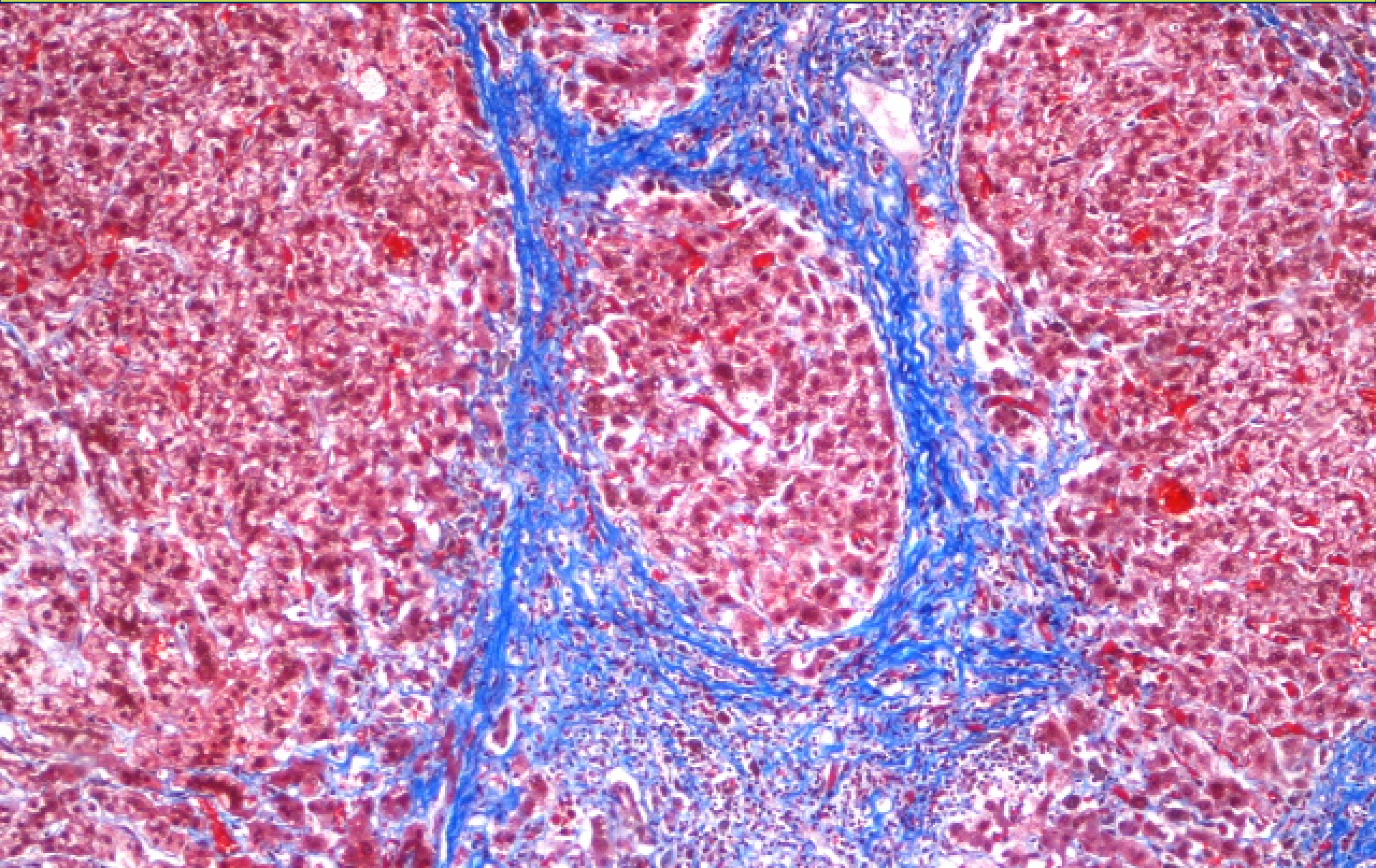




Iron stain of liver – iron staining in hepatocytes and histiocytes



**Trichrome stain of liver – medium magnification to show liver cirrhosis with fibrosis and nodules in a patient with hepatic iron overload (no iron stain)**





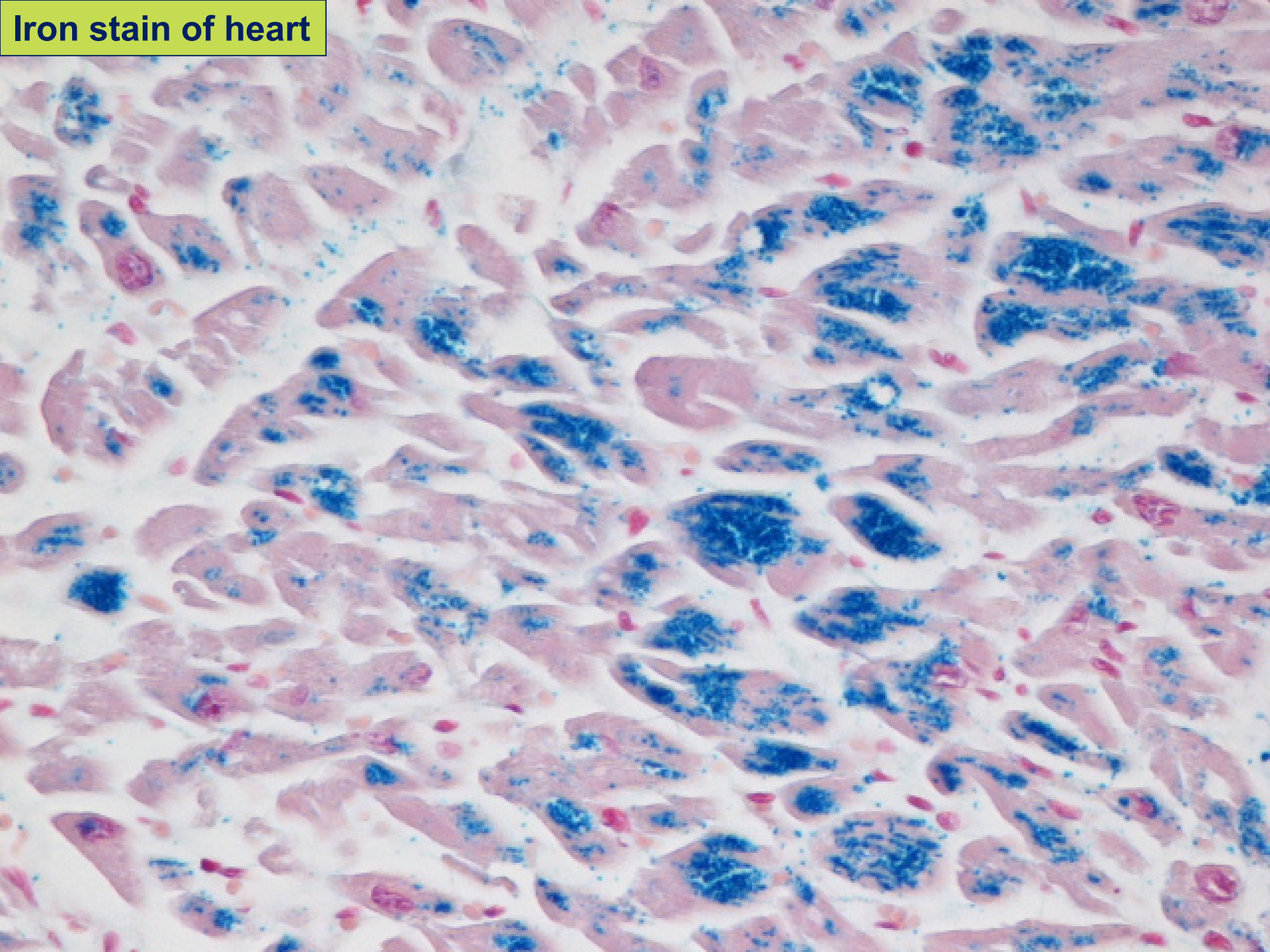
**Dilated cardiomyopathy with iron overload**



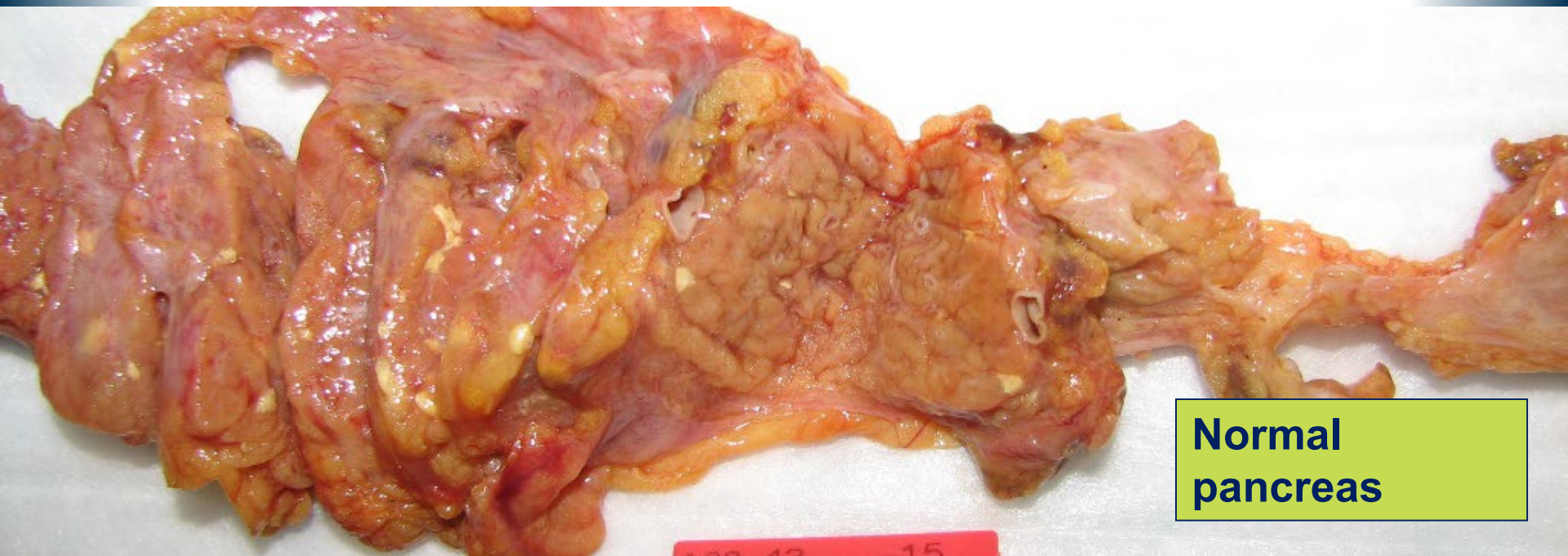
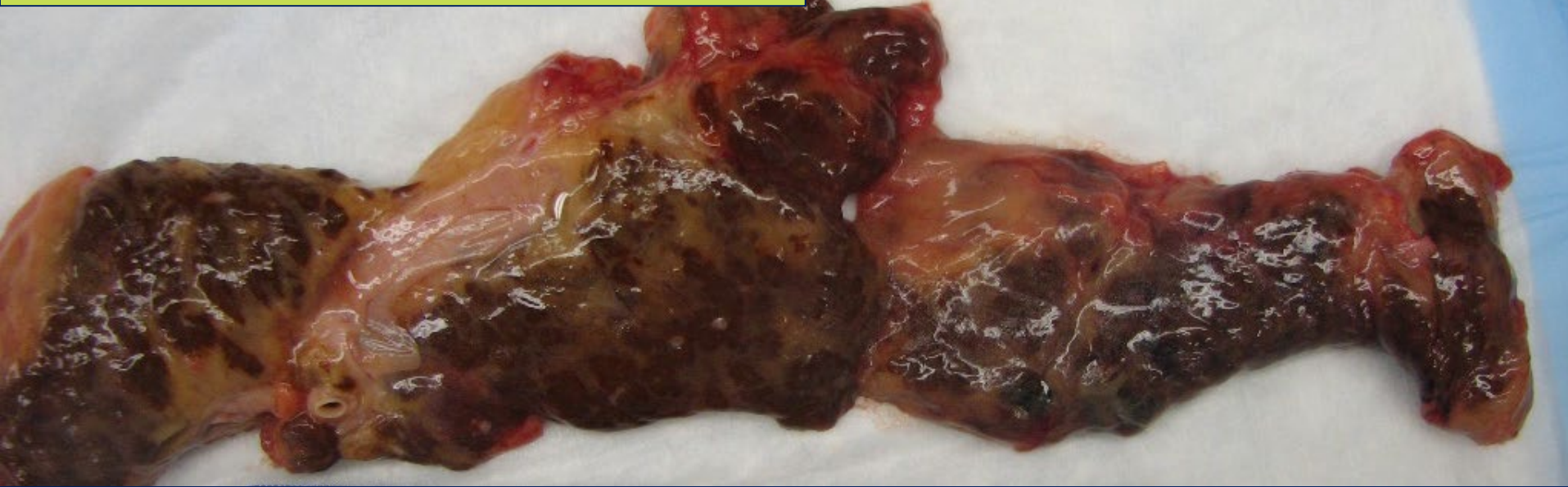
**Hypertrophic  
cardiomyopathy**



Iron stain of heart



**Pancreas with massive iron overload**



**Normal  
pancreas**