C15

SCOLIOSIS IN RADIOLOGY

OBJECTIVES

-Define the fundamental characteristics of scoliosis.

-Distinguish between the different types of scoliosis.

-Identify the common signs and symptoms of scoliosis.

-Describe the role of imaging techniques in the diagnosis of scoliosis.

-Outline the various treatment approaches for scoliosis.

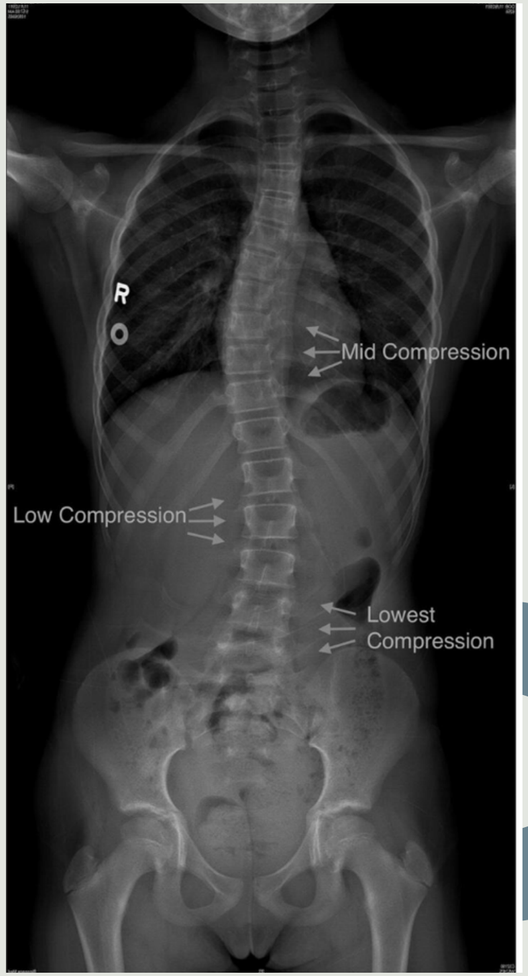
TABLE OF CONTENTS

INTRODUCTION TO SCOLIOSIS

- Scoliosis is a condition where the spine curves abnormally sideways.
- It can develop in childhood or adolescence and varies in severity .
- Radiology plays a crucial role in diagnosing and monitoring scoliosis.

https://radiopaedia.org/articles/scoliosis-paap-view-1

https://radiopaedia.org/articles/scoliosis-radiography



https://www.lyonsstructuraltherapy.com/blog/2019/12/13/read-and-interpret-x-ray-and-radiologists-report-for-scoliosis

FACTS ABOUT SCOLIOSIS

- Affects 2-3% of the US population
  - Around 6-9 million people
- 80% of that 6-9 million do not know the cause of their Scoliosis
- Classified as either:
  - Idiopathic
  - Congenital
  - Neuromuscular

CAUSES & TYPES

Types:

- Idiopathic (most common, unknown cause)
- Congenital (present at birth)
- Neuromuscular (related to conditions like cerebral palsy)

Possible Causes:

- Genetics
- Abnormal spine development
- Hormone Chnages
- Cell Structure Changes
- Underlying conditions

IDIOPATHIC

- Most common form of scoliosis
- Approximately 80% of Scoliosis cases are considered idiopathic
- Considered idiopathic when:
  - Root cause of disease is unknown

CONGENTIAL

- Occurs when malformations of spinal vertebra start while still in embryo
- Usually detected very early on in a child's life
  - Can progress and worsen as child grows
- Occurs in 1 in 10,000 babies

NEUROMUSCULAR

- Scoliosis occurs as a result of different disease
  - Usually neurological or muscular disease
- Example:
  - Scoliosis due to cerebral palsy or muscular dystrophy
- Progresses much faster
- Requires surgical procedures usually

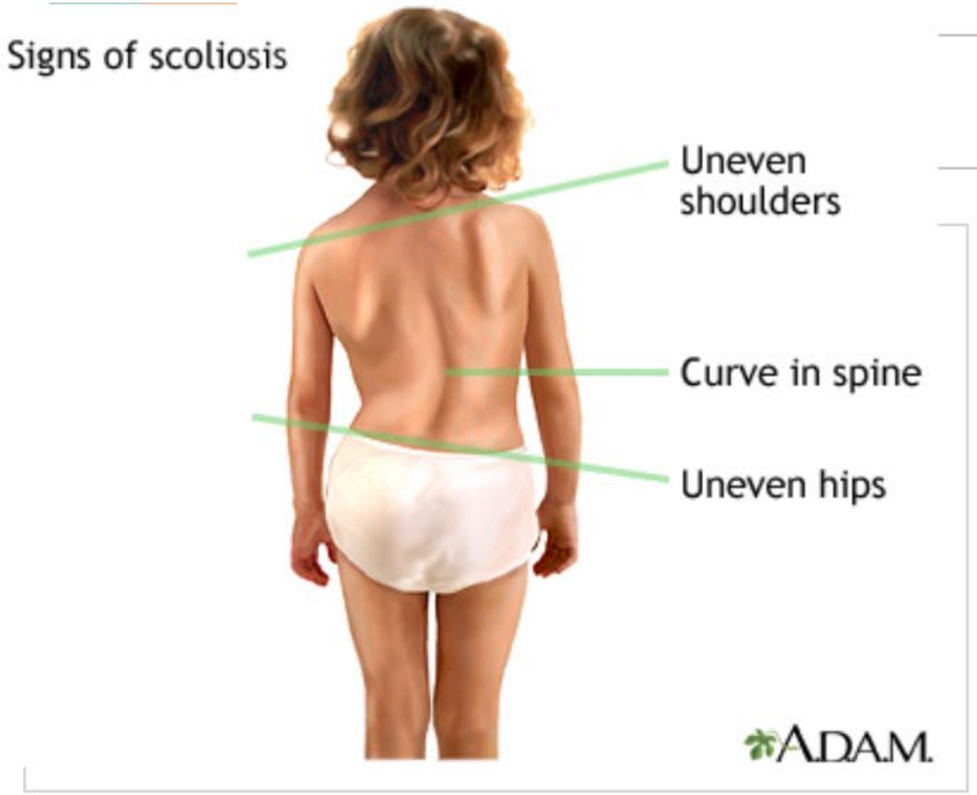
SYMPTOMS

- Uneven shoulders or hips
- Visible spine curvature
- Back pain in severe cases

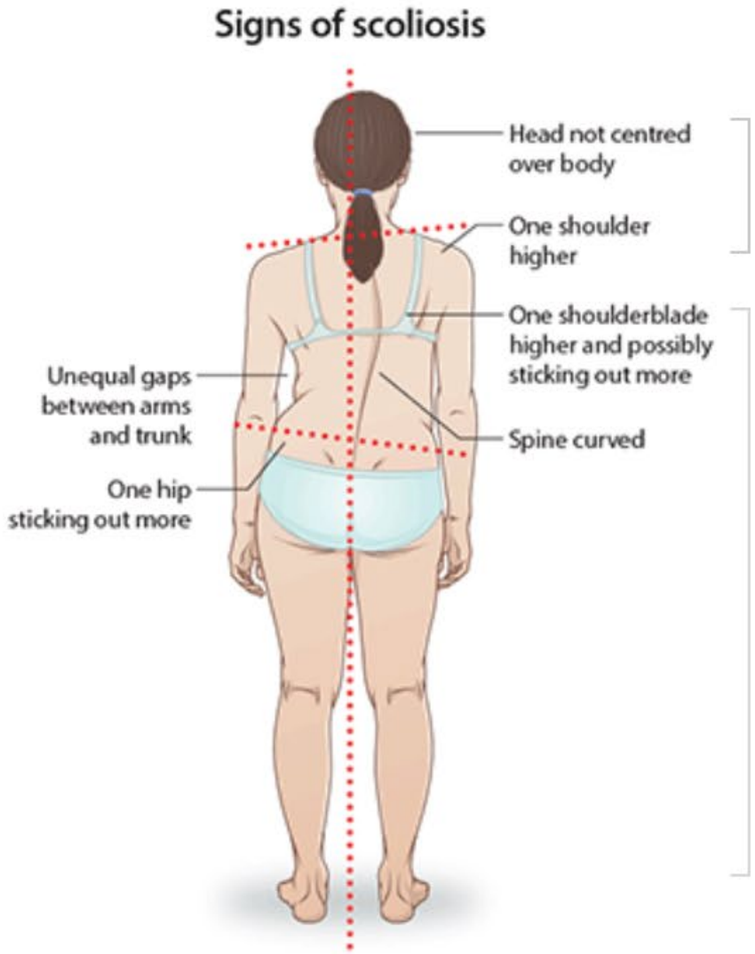
DIAGNOSING

- Can usually be done with a physical exam
- When patient leans forward, and their spine is examined
- Curve is usually detectable
- **X-ray**

https://www.pennmedicine.org/for -patients-and-visitors/patient-information/conditions-treated-a-to-z/scoliosis



Click to



https://raisingchildren.net.au/guides/a-z-health-reference/scoliosis

RADIOLOGY & SCOLIOSIS

- X-ray:
  - Primary imaging method for detecting scoliosis
  - Measures Cobb Angle to assess severity

- MRI:
  - Used if neurological symptoms are present

- CT Scan:
  - Detailed imaging for pre-surgical planning

TREATMENT

Different Approaches:

- Observation: For mild cases (Cobb angle < 20°)
- Bracing: Recommended for growing children (Cobb angle 20°-40°)
- Surgery: Considered for severe cases (Cobb angle > 40°) using spinal fusion or rods
- Cobb angle is a measurement taken from x-ray, used to determine the degree of curvature in ones spine- sum of upper and lower vertebral tilt angles

TREATMENT OPTION

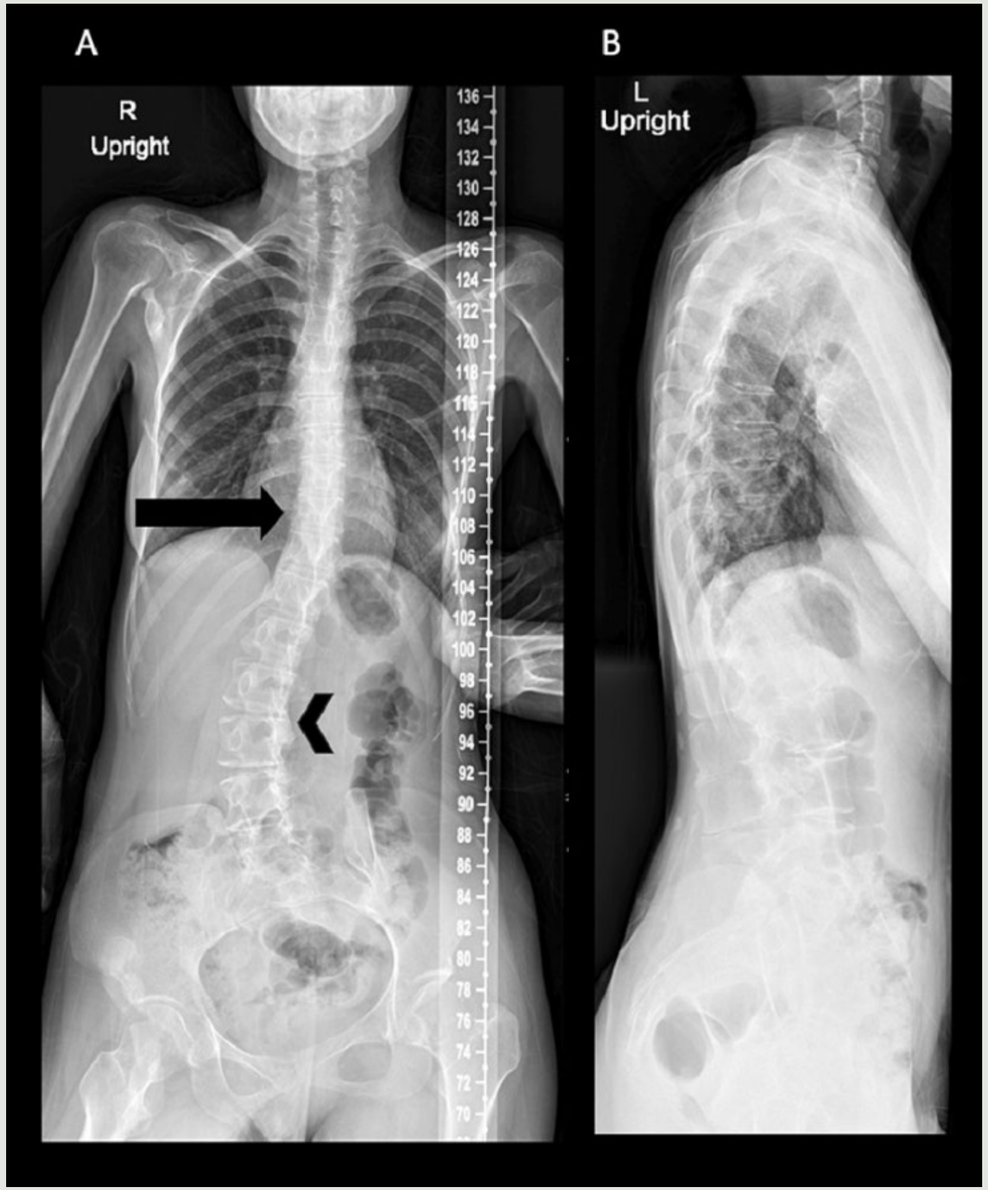
TREATMENT VIDEO

https://youtu.be/1Eou -huPJ68

IMAGING PROFESSIONAL ROLE

- Take optimal images
  - Include entire spine
  - Use proper techniques
  - Proper breathing instructions
  - Greater convexity toward the board for lateral image
- Communicate with our patient
- Keep patients as comfortable as possible
- Maintain patient safety
- Since many Scoliosis patients are children, ensure communication is on their level

SCOLIOSIS SERIES IMAGES



https://www.researchgate.net/figure/Scoliosis -series-X-ray-A-AP-and-B-lateral -scoliosis -series-X-ray-showing -gentle_fig2_3766664_38

CONCLUSION

- Scoliosis is a very common condition
- Varies between every patient
- Manageable in most cases
  - people can maintain a full, “regular lifestyle”
- But severe conditions can be debilitating
- X-ray plays a huge role in diagnosis

Thank You

References

Lyons, J. (2019, December 14). Read and interpret X -ray and radiologist's report for Scoliosis. https://www.lyonsstructuraltherapy.com/blog/2019/12/13/read -and -interpret -x-ray -and -ra\diologists -report -for -scoliosis

Mayo Foundation for Medical Education and Research. (2023, May 13). Scoliosis. Mayo Clinic. https://www.mayoclinic.org/diseases -conditions/scoliosis/symptoms -causes/syc -20350716

Pennmedicine.org. (n.d.). https://www.pennmedicine.org/for -patients -and -visitors/patient -information/conditions -treated -a-to -z/scoliosis

Scoliosis. AANS. (2024, April 30). https://www.aans.org/patients/conditions -treatments/scoliosis/

Scoliosis. Johns Hopkins Medicine. (n.d.). https://www.hopkinsmedicine.org/health/conditions -and -diseases/scoliosis

Scoliosis (PA/AP view) | radiology reference article | radiopaedia.org. (n.d. -a). https://radiopaedia.org/articles/scoliosis-paap-view-1

Scoliosis radiography | radiology reference article | radiopaedia.org. (n.d.-b). https://radiopaedia.org/articles/scoliosis-radiography

Scoliosis series X-ray (A) AP and (b) lateral scoliosis series X-ray... | download scientific diagram. (n.d.-d). https://www.researchgate.net/figure/Scoliosis-series-X-ray-A-AP-and-B-lateral- scoliosis-series-X-ray-showing-gentle_fig2_376666438

Scoliosis. Raising Children Network. (2022, October 25). https://raisingchildren.net.au/guides/a-z-health-reference/scoliosis

U.S. Department of Health and Human Services. (2024, June 21). Niams health information on Scoliosis. National Institute of Arthritis and Musculoskeletal and Skin Diseases. https://www.niams.nih.gov/health-topics/scoliosis