40 Ehlers-Danlos Syndromes

EDS

Joint laxity and hypermobility, hyperextensible doughy skin, atrophic scars, connective tissue fragility, easy bruising

Frequency: 1 in 150,000.

Genetics

Genetically heterogeneous; EDS I, severe and classic type, is autosomal dominant (OMIM 130000); EDS II, the mild classic form, is autosomal dominant (OMIM 130010); EDS III, the benign hypermobility form, is autosomal dominant (OMIM 130020); types I–III have been linked to *COL5A1*, which has been mapped to 9q34.2–3 in some families; types I and II have also been linked to *COL5A2*; EDS IV, the arterial, ecchymotic or Sack type, is autosomal dominant (OMIM 130050), due to mutation of the *COL3A1* gene, which has been mapped to 2q31–32, although genetic heterogeneity is likely with possibly 2 dominant (EDS IVA, IVC) and 2 recessive (EDS IVB, OMIM 225350 and EDS IVD, OMIM 225360) forms; EDS V is X-linked (OMIM 305200); EDS VI is autosomal recessive (OMIM 225400), the ocular-scoliotic form being due to deficiency of the lysyl-hydroxylase gene (*PLOD*), which has been mapped to 1p36.2–3 (EDS VIA), but genetically heterogeneous (EDS VIB, OMIM 229200); EDS VII is autosomal dominant (OMIM 130060), due to mutation of either the *COL1A1* (VIIA1) or the *COL1A2* (VIIA2) gene at 7q22; EDS VIII, the periodontosis type, is autosomal dominant (OMIM 130080); other forms include: EDS progeroid (autosomal dominant, OMIM 130070); autosomal dominant, type unspecified, genetically heterogeneous (OMIM 130090); EDS with platelet dysfunction, autosomal recessive (OMIM 225310); EDS autosomal recessive type unspecified (OMIM 225320).

Clinical Features

Highly variable, depending on the type

- Premature rupture of fetal membranes
- Fragile skin, easy bruising, cigarette-paper scars, loose skin, prominent venous markings, keloid formation, ecchymoses, acrogeria
- Retinal detachment, microcornea, myopia
- Mitral valve prolapse, spontaneous arterial rupture, carotid-cavernous fistula, varicose veins, arterial tortuosity, dissecting aortic aneurysm
- Joint hypermobility and dislocation
- Scoliosis, kyphoscoliosis
- Pneumothorax
- Hiatus hernia, bowel diverticula and rupture, inguinal hernia, bladder diverticulum
- Pes planus, tendon rupture

Differential Diagnosis

- Different EDS types
- Articular hypermobility, familial
- Cutis laxa
- Larsen syndrome

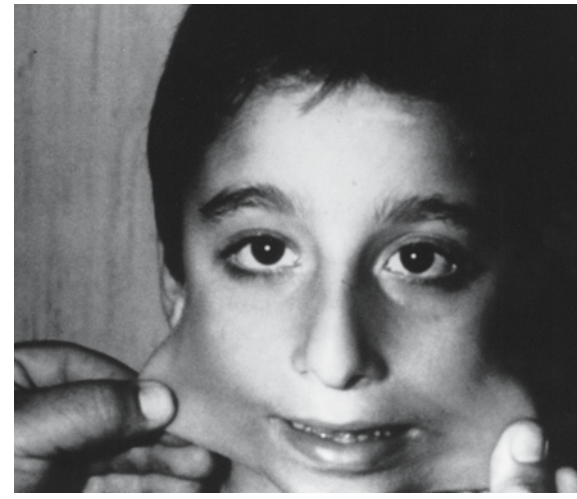

Fig. 40.1. Patient 1, age 12 years. Loose, hyperelastic skin. (Courtesy of Dr. O. Gabrielli, University of Ancona, Italy)

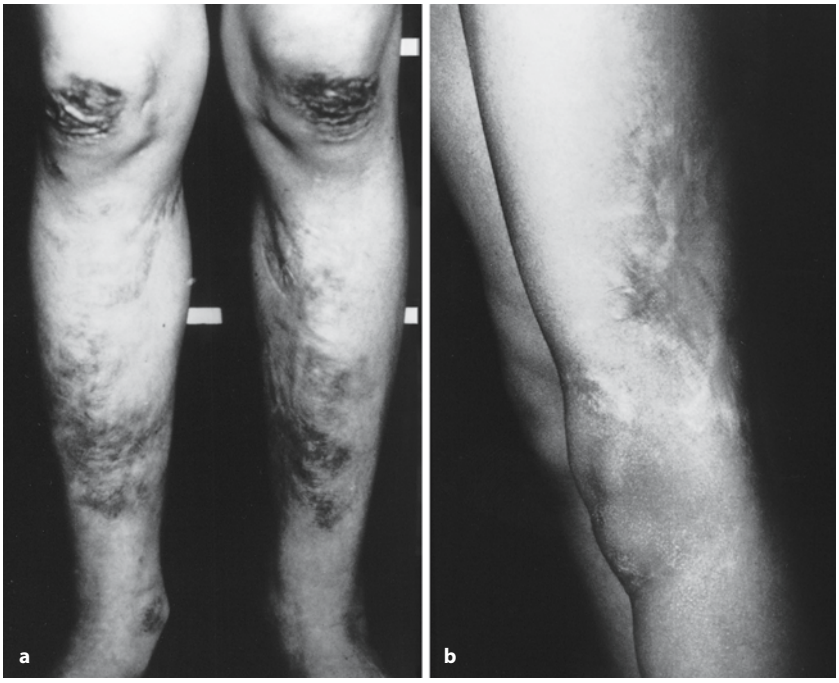

Fig. 40.2 a, b. Patient 2, adult. Cigarette-paper scars, keloid formation, fragile skin. (Courtesy of Dr. O. Gabrielli, University of Ancona, Italy)

Radiographic Features

Generalized Bone Defects
- Multiple calcified nodules in the subcutaneous tissue
- Calcification of soft tissue around joints

Joints
- Multiple subluxations or dislocations

Skull
- Delayed ossification of the cranial vault
- Flattened orbits
- Micrognathia
- Hypertelorism

Spine
- Kyphoscoliosis
- Lordosis (thoracic)
- Platyspondyly

Chest
- Thoracic asymmetry
- Subluxation of the sternoclavicular joints
- Pectus carinatum
- Elongation of the chest
- Costovertebral subluxations

Extremities
- Elongation of the ulnar styloid process
- Radioulnar synostosis
- Acro-osteolysis
- Flexion deformity of hand joints
- Hip dislocation
- Clubfoot, flatfoot, pes cavus
- Carpal and tarsal fusions
- Clinodactyly of 5th fingers
- Arachnodactyly
- Syndactyly

Pelvis
- Protrusio acetabuli

Bibliography

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