Journal Homepage: - www.journalijar.com

INTERNATIONAL JOURNAL OF ADVANCED RESEARCH (IJAR)

Article DOI: 10.21474/IJAR01/23376
DOI URL: http://dx.doi.org/10.21474/IJAR01/23376

RESEARCH ARTICLE

CASE REPORT EHLER DANLOS RARE CAUSE OF PULMONARY HYPERTENSION

Murwan Mohamed Saeed[1], Magdi Ali Ahmed[2], Safa Mohammedelfatih[3] and Enas Ali Ahmed[4]

1. MD Respiratory Medicine Consultant Pulmonologist.
2. MD, MRCSED, FICO Consultant Vitreo-Retinal Surgeon.
3. Registrar of Pulmonology MBBS.
4. MD Ophthalmology Specialist.

Manuscript Info

Manuscript History
Received: 15 February 2026
Final Accepted: 18 March 2026
Published: April 2026

Abstract

Ehler Danlos syndrome is an inherited disorder that affect theconnectiv e tissue, recently Ehler Danlos syndrome subdivided in different 13 to 14 types. Ehler Danlos syndrome is not a direct cause of pulmonary hypertension but association between the two condition may occur.We presented a rare case of pulmonary hypertension as first presentation of Ehler Danlos syndrome in years' male who presented with progressive dyspnea.

Introduction:-

Ehlers Danlos:-

Ehlers Danlos syndromes are hetrogenous connective tissue genetic disorders thatcharacterized by joint hypermobility, skin hyperextensibility and tissue fragility.

Recently Ehlers Danlos syndromes classified into different clinical types:

1. **Classical:** which is characterized by fragile skin,atrophic scaring and hypermobility.
2. **Vascular:** which is characterized by arterial fragility, aneurysms and bruising, thin nose and thin lips.
3. **Arthrocholasia:** Which is characterized by hip dislocation, severe hypermobility and tissue fragility.
4. **Dermatosparaxis:** This characterized by short limbs,skin fragility and specific craniofacial features.
5. **Cardiac valvular:** this characterized by valvular insufficiency.
6. **Kyphoscoliotic:** which is characterized by Kyphoscoliotic.
7. **Classical like type1:** characterized by hyperextensible skin but no scar atrophy.
8. **Classical like type 2:** This characterized by hyperextensible skin in presence of scar atrophy, osteopenia and footdeformity.
9. **Myopathic:** Characterized byhypotonia,contractures and hypermobility.
10. **Musculocontractural:** This characterized by multiple contractures, fragile hyperextensible skin and specific craniofacial features.
11. **Spondylodysplastic:** this characterized by short stature, hypotonia and bowing legs.
12. **Brittle cornea syndrome:** This characterized by thin cornea, retinal detachment and hearing loss.
13. **Periodontal:** characterized by tooth loss, pretibial plaques
14. **Hypermobile:** characterized with joint hypermobility, joint instability and chronic pain (1,2).

Corresponding Author:- Murwan Mohamed Saeed
Address:-MD Respiratory medicine Consultant Pulmonologist.

Diagnosis of Ehlers Danlos:-
The diagnosis of Ehlers Danlos confirmed genetically butits suspension usually clinical which is supported by Beighton scale that make clinical diagnosis.

Beighton scale:

	LEFT	RIGHT
1. Passive dorsiflexion and hyperextension of the fifth MCP joint beyond 90°	1	1
2. Passive apposition of the thumb to the flexor aspect of the forearm	1	1
3. Passive hyperextension of the elbow beyond 10°	1	1
4. Passive hyperextension of the knee beyond 10°	1	1
5. Active forward flexion of the trunk with the knees fully extended so that the palms of the hands rest flat on the floor	1	1
TOTAL	/ 9	

The score5/9 or more is positive for adult up to 50 years, score 6/9 is positive for children and score 4/9 or more is positive for adult above 50 years (3)

Pulmonary complications of Ehlers Danlos:
Pulmonary complication of Ehlers Danlos are vary and depends on type of Ehlers Danlos syndromes, in general it includes:
1. spontaneous pneumothorax.
2. Hemoptysis.
3. Hematomas.
4. Hemothorax.
5. Emphysema.
6. Tracheobronchomalacia.
7. chest wall deformities like scoliosis or pectus excavatum.
8. Sleep apnea.
9. Diaphragmatic hernia. (4,5.6.7.8.9,10)

Pulmonary hypertension:
Pulmonary arterial hypertension (PAH) is a chronic and progressive disease leading to right heart failure and ultimately death if untreated, definite diagnosis of Pulmonary hypertension is resting mean pulmonary artery pressure (m PAP) of ≥ 25 mmHg and a normal pulmonary capillary wedge pressure (PCWP) of ≤ 15 mmHg (11).

PAH has recently been reclassified by the WHOinto five groups (12) which are:
Group 1: Pulmonary arterial hypertension (PAH) Idiopathic: (previously termed primary pulmonary hypertension) Familial Associated conditions: Collagen vascular disease (scleroderma and rheumatoid arthritis and SLE) Congenital heart disease with systemic to pulmonary shunts (e.g., ventricular septal defect, patent ductus arteriosus, atrial septal defect) HIV (the mechanism by which HIV infection produces pulmonary hypertension remains unknown) Drugs and toxins (e.g. fenfluramine) Sickle cell disease Persistent pulmonary hypertension of the newborn
Group 2: Pulmonary hypertension with left heart disease left-sided atrial, ventricular or valvular disease such as left ventricular systolic and diastolic dysfunction, mitral stenosis and mitral regurgitation
Group 3: Pulmonary hypertension secondary to lung disease/hypoxia
Group 4: Pulmonary hypertension due to thromboembolic disease (chronic pulmonary embolism(COPD ILD Sleep apnea Hypoventilation condition 5.
Group 5: Miscellaneous Systemic conditions (e.g., sarcoidosis, pulmonary histocytosis) Hematologic conditions (e.g., myeloproliferative diseases) Definite diagnosis of PHT depend on RHC but ECG and echocardiography may help in diagnosis (11).

Association between Ehlers Danlos and pulmonary hypertension:
The association between EhlerDanlos syndrome and pulmonary hypertension is very rare, pulmonary hypertension may occur in patient of vascular type due to vascular stenosis especially pulmonary stenosis or due to pulmonary embolism that result from vascular endothelium injuries. Pulmonary hypertension also occurs in both Kyphoscoliotic type and hypermobile type as both may result in restrictive lung and hypoventilation.

Case presentation:-

History:-

20 years' single male from Port Sudan presented with acute onset shortness of breath that started 1 day prior to admission, the dyspnea progressed rapidly, worse with ordinary execise, and relieved by rest associated with palpitations and bluish discoloration of the hands and tongue, there is pendepnea but he has no orthopnea nor PND, there is no chest pain, cough or haemoptysis. The condition associated with low grade intermittent fever that not associated with sweating or rigor relieved by paracetamol, the patient lost about 12% of his weight despite good appetite.Our patient complains of attacks of severe migraine headache, joints pain but he has no joint stiffness nor swelling, no skin pigmentation nor other skin changes. The patient has no neurological symptoms, Our patient has history of Pulmonary tuberculosis 3 years ago, declared cured after completing a full course of anti- tuberculosis (FDC) according to SudanTB control program protocol (two-month rifampicin, isoniazid, pyrazinamide and ethambutol as intensive phase and four months of rifampicin and isoniazid). He has no family history of chronic or inherited diseases. Our patient of low economic state, not smoker nor alcoholic, he drops out of school because of his illness.

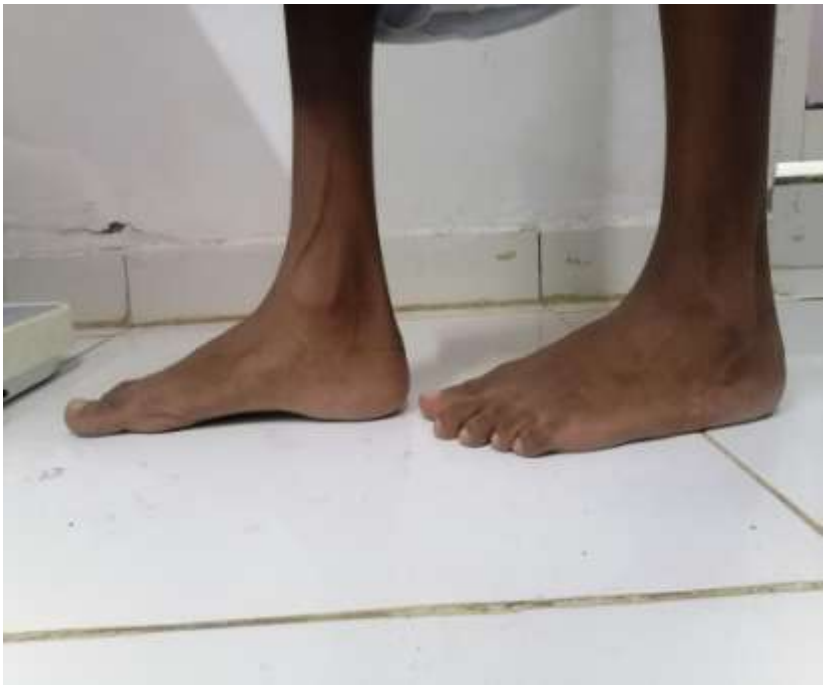
Clinical examination:-

Patient looks ill, cachectic, dyspneic, cyanotic, not pale or jaundice with thin lips and nose. RR 38/minute. Pulse 112 beat/ min bounding pulse synchronous with sinus rhythm and peripheral pulses are intact, BP 128/77, SO2 78 % on room air corrected with 5L via face mask oxygen to 92%. There is Fine tremor but no flapping tremor, there is peripheral cyanosis seen on hands and tongue.Patient has grade 2 finger clubbing hyper laxity of small joints of the hands and wrists (picture 1 &2), patient has high arch palate (picture 3) There is visible pulsation in the neck but JVP not raised and no palpable lymph node. JVP not raised. Wide range of neck movement detected(picture 4), There is weight bearing flat foot, no lower limb edema.

Picture (1)

Picture (2

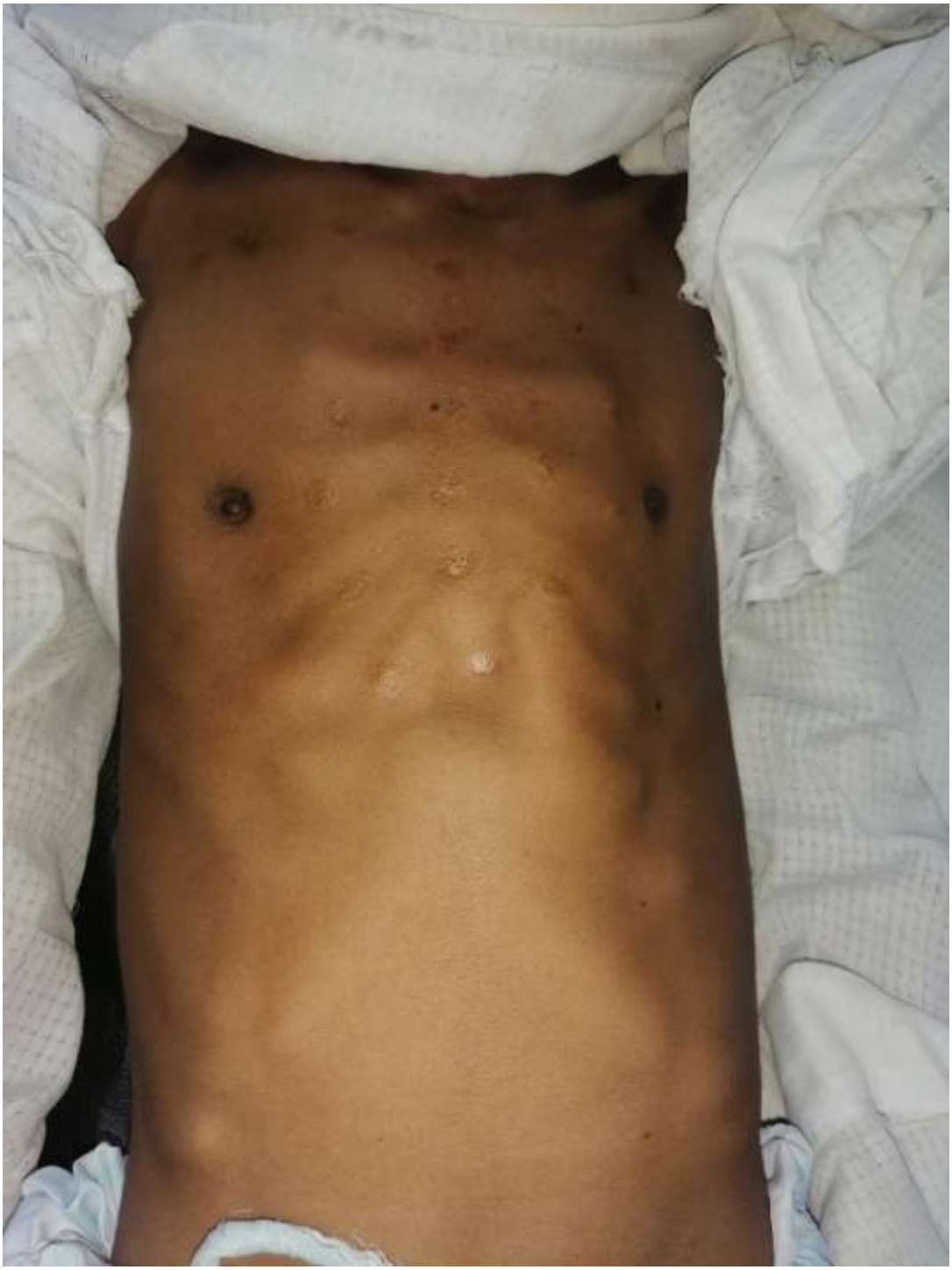
Picture (3)



Picture (4)

Pericardium examination revealed active pericardium,apex detected at 5th intercostal space, midclavicular line, normal character and no thrill, palpable P2 but no left parasternal heave. Both S1 and S2 are loud and p2 is accentuated with splitting. Chest examination revealed elongated chest (picture 5), that shows intercostal recession, left upper zone depression, rachitic rosary and central cautery marks. The patient has thoracoabdominal breathing and no dilated vessels. Chest expansion appear less in Lt side, while trachea remain central. Percussion node impaired in Lt upper zone and being hyper-resonant over the rest of the chest. Air entry equal on both hemithorax, normal vesicular breathing and bilateral coarse crackles detected along the respiratory cycle. Ophthalmologist

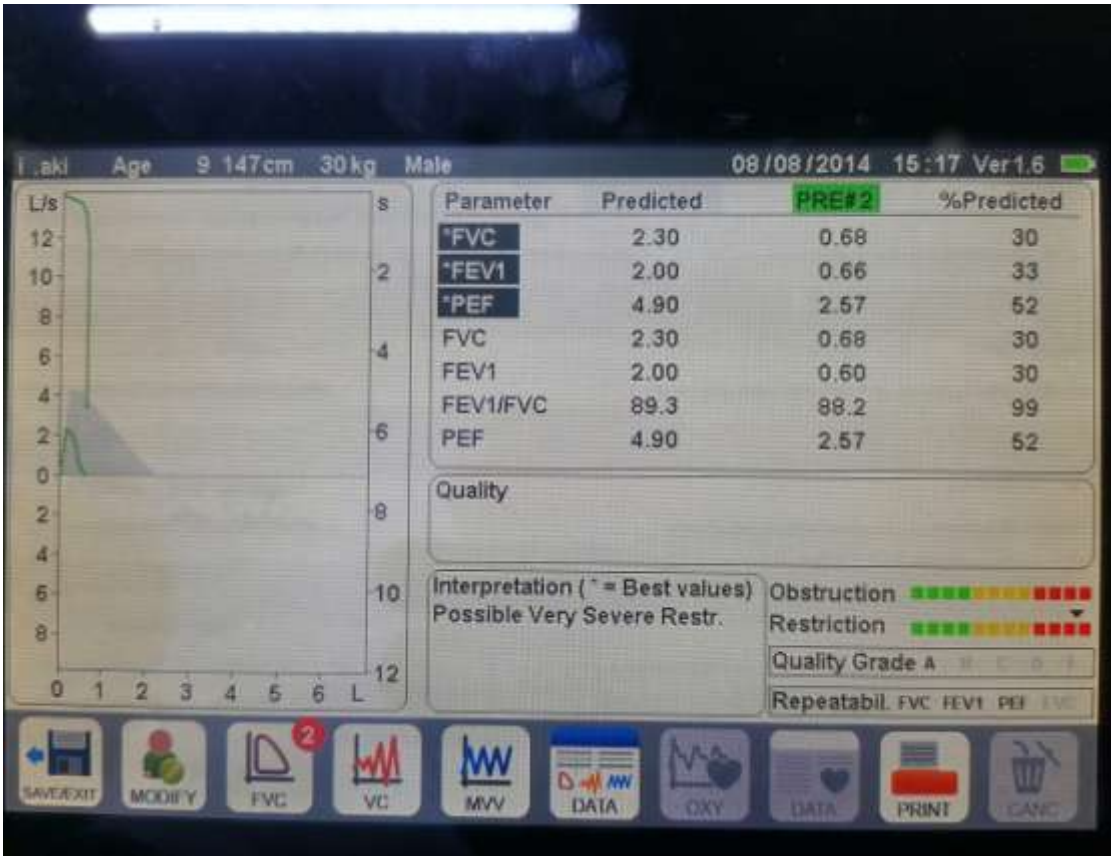
consulted and ophthalmological examination revealed visual acuity test: 6\6 tachymetry: thin cornea fundus examination: tortious vessels and bilateral disc edema more in lt eye. Neurological and abdominal examination are unremarkable.



Picture (5)

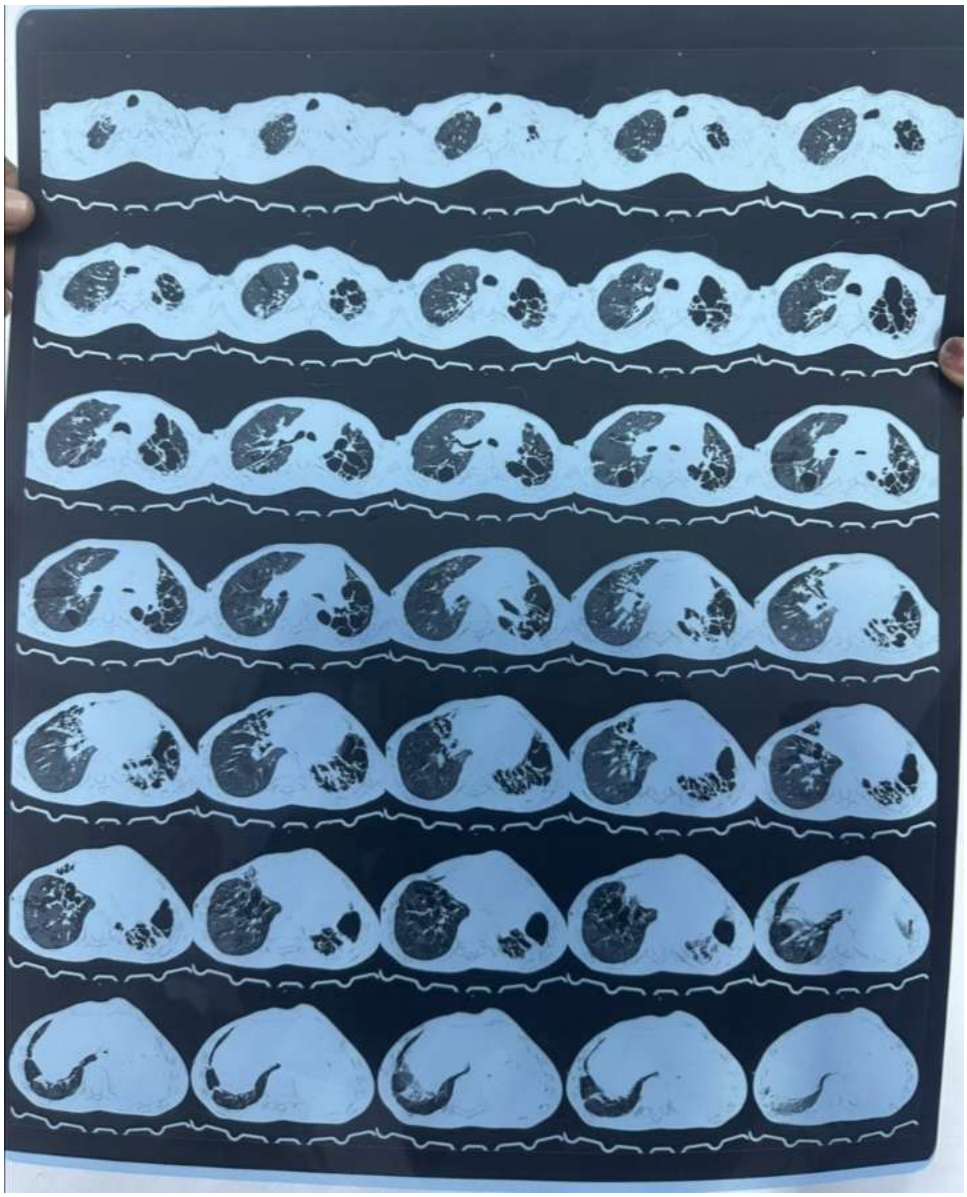
Investigation:-

CBC unremarkable it showsHB 12.2 g/dl, WBCs 7000/ L and platlets 435000/L. Blood urea 45 mg/dl, serum creatinine 0.9 mg/dl. Arterial Blood gases show compensated respiratory acidosis PH 7.32, PO2 39 mmHg,PCo2 mmHg: 87, Hco3 36 mE/Ql. Spirometry study show restrictive pattern (picture 6): Predicted FVC 30%, predicted FEV1 33% and ratio of 99%.



Picture (6)

Echocardiography study detect dilated pulmonary trunk, mild TR andPASP 42 mmHg otherwise unremarkable study. CT chest shows loss of Lt lung volume, diffuse GGO in Rt lung and bilateral thick wall cyst of varying size (picture 7). Ophthalmologist advice MRI head but because of absence of MRI machine we requested CT head that revealed diffuse vascular prominence and vascular rowdiness in foramen magnum.



Picture (7)

Diagnosis:-

Our patienthas 6/9 ofbeighton score which is positive for his age so this is a case of Ehler Danlos syndrome, he didn't show typical feature of specific type but has features of deferent types therefore we diagnosed the patient as Overlap type of Ehler Danlos syndrome, this complicated by Pulmonary hypertension that supported by clinical and echocardiography finding cystic bronchiectasis which is supported by clinical and chest CT finding, therefore our final diagnosis is Ehler Danlos associated Bronchiectasis and Pulmonary Hypertension.

Discussion:-

Although Ehler Danlos is rare condition in Sudan, we found case of Ehler Danlos syndrome combined with amyeloproliferativeneoplasm (13) and case of Ehler Danlos syndrome with lateral ankle instability (14) but this is the first reported case of association between Ehler Danlos syndrome and pulmonary hypertension in Sudan. Diagnosis of pulmonary hypertension in this area depend on estimated PASP and the diagnosis of Ehler Danlos syndrome on this case based clinically on of beighton score. Although there is no strong evidence for Ehler Danlos as a cause of pulmonary hypertension but multiple factors in Ehler Danlos syndrome contribute in developing

hypertension; our patient has feature of vascular types suggested with facial features,migraineheadache and CT brain findings, this type may result in stenosis, vascular endothelial injuries or thrombus formation thus it lead to pulmonary hypertension. Again he has feature of cardiac valvular type supported by MR although PHT may cause MR, at same time our patient shows feature of hypermobile and marfan like type that may cause restrictive lung and thus contribute in developing PHT. Bronchiectasis is not reported pulmonary complication of Ehler Danlos syndrome but collagen disorder result in fibrosis and thus traction bronchiectasis which occurs in our case and may contribute in developing of pulmonary hypertension. This patient also shows features of Brittle cornea syndrome that confirmed by ophalmology and fundus examination findings. Diagnosis of Ehler Danlos in this patient delayed because of low level of awareness among population and surrounding medical staff which is lead to many sequences and complication. 9- Conclusion: This is first case of association between Ehler Danlos and pulmonary hypertension. Ehler Danlos syndrome usually doesn't presents with specific type and the overlap types may cause pulmonary hypertension through different factors not just association.

References:-

1. Malfait F, Francomano C, Byers P, et al. The 2017 international classification of the Ehlers-Danlos syndromes. Am J Med Genet C Semin Med Genet 2017; 175: 8–26. [DOI] [PubMed] [Google Scholar]
2. Castori M, Tinkle B, Levy H, et al. A framework for the classification of joint hypermobility and related conditions. Am J Med Genet C Semin Med Genet 2017; 175: 148–157. [DOI] [PubMed] [Google Scholar]
3. Alter M. Science of Flexibility. 3rd edition. Sheridan books, 2004. p89
4. Ayres J, Rees J, Cochrane GM. Haemoptysis and non-organic upper airways obstruction in a patient with previously undiagnosed Ehlers-Danlos syndrome. Br J Dis Chest 1981; 75: 309–310. [DOI] [PubMed] [Google Scholar]
5. Gu G, Yang H, Cui L, et al. Vascular Ehlers-Danlos syndrome with a novel missense COL3A1 mutation present with pulmonary complications and iliac arterial dissection. Vasc Endovascular Surg 2018; 52: 138–142. [DOI] [PubMed] [Google Scholar]
6. Dowton SB, Pincott S, Demmer L. Respiratory complications of Ehlers-Danlos syndrome type IV. Clin Genet 1996; 50: 510–514. [DOI] [PubMed] [Google Scholar]
7. Kawabata Y, Watanabe A, Yamaguchi S, et al. Pleuropulmonary pathology of vascular Ehlers-Danlos syndrome: spontaneous laceration, haematoma and fibrous nodules. Histopathology 2010; 56: 944–950. [DOI] [PubMed] [Google Scholar]
8. Corrin B, Simpson CG, Fisher C. Fibrous pseudotumours and cyst formation in the lungs in Ehlers-Danlos syndrome. Histopathology 1990; 17: 478–479. [DOI] [PubMed] [Google Scholar
9. Deleon AC,, Jr, Perloff JK, Twigg H, et al. The Straight back syndrome: clinical cardiovascular manifestations. Circulation 1965; 32: 193–203. [DOI] [PubMed] [Google Scholar]
10. Cottin V, Avot D, Lévy-Bachelot L, Baxter CA, Ramey DR, Catella L, Bénard S, Sitbon O, Teal S. Identifying chronic thromboembolic pulmonary hypertension through the French national hospital discharge database. PLoS One. 2019;14(4): e0214649.
11. Crofton and Douglas Respiratory disease, Anthony Seaton, A. Gordon Leitich , Fifth edition, (2002), page(748).
12. Oxford hand book of clinical medicine, Ian B. Wilkinson, tenth edition 2017. Page (451)
13. Ziryab Taha, et al, Coexistence between myeloproliferative neoplasm and brain glioma in a patient with Ehler Danlos syndrome: A case report, Journal of Neurological science, Volume 455, Supplement 122067December 2023,
14. Osama Elkhider A, et al, Lateral ankle instability in a young patient with Ehler- Danlos syndrome,Shendi University Journalof Applied Science