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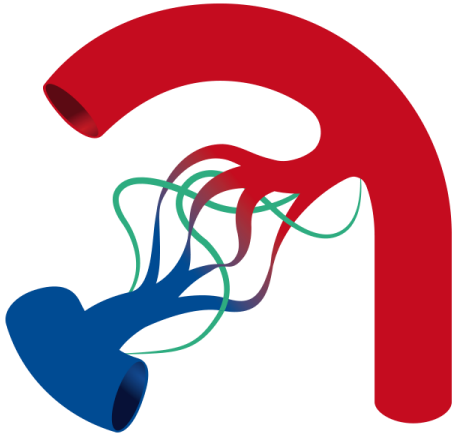
for rare or low prevalence complex diseases

Network Vascular Diseases (VASCERN)



Heritable Thoracic Aortic Diseases (HTAD)

Final Approved Patient Pathway by the HTAD Working Group – 29/08/2019

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Disclaimer

- This document is an opinion statement reflecting strategies put forward by experts and patient representatives involved in the HTAD Rare Disease Working Group of VASCERN.
- It is preferable that patients be evaluated in a multidisciplinary center specialized in the diagnosis and management of heritable thoracic aortic diseases.
- This pathway is issued on 29/08/2019 and will be further validated and adjusted as needed.

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HTAD Diagnostic Work-Up

Non-expert Centers → **EXPERT CENTERS** RED FLAGS → **MULTIDISCIPLINARY CLINICAL EVALUATION** → **MANAGEMENT & FOLLOW UP**

7 signs[1]

Guide for referral to expert centers in case of doubt

- Medium size artery aneurysm/dissection
- **Aortic root aneurysm**
  - Child <18yo with Zscore ≥3
  - Adult with Zscore >3,5
  - Adult with Zscore 2,5 – 3,5
    - <60yo
    - >60yo, if no AHT[2]
- Aortic dissection <70 yo
- Ectopia lentis
- Systemic score[3] Child[4] >5 / Adult >7
- Bicupid aortic valve[5]
- Positive family history[6]

→ **Suspect HTAD**

- Clinical examination & assessment
- Cardiovascular imaging: TTE, angio-CT/MRA
- Ophthalmology in children <10 yo
- Clinical evaluation in FDR

CONFIRMATION

- HTAD panel
- BAV panel[7]
- EL panel[7]

(tentative) CLINICAL DIAGNOSIS

- HTAD suspicion cleared
- Syndromic HTAD: Marfan syndrome, LDS, AOS…
- Non syndromic HTAD

Surveillance & follow up[8]
In accordance with clinical need & geographical location

Access to teams required include

- (Ped) Cardiology[9]
- Vascular imaging[9]
- Cardiac & thoracic vascular surgery
- Ophthalmology
- Orthopedics & physiotherapy
- Psychosocial follow up
- Obstetrics & fetal medicine
- Clinical genetics
- Neurosurgery
- Facilitate contact with patient organisations

Legend: Genes; Investigations; Clinical evaluation

Abbreviations:

HTAD: Heritable Thoracic Aortic Disease
TAA/D: Thoracic Aortic Aneurysm/Dissection
TTE: Transthoracic Echocardiography
AHT: arterial hypertension
AR: Aortic Regurgitation
AOS Aneurysm-osteoarthritis syndrome
Zscore calculation in accordance with age, gender and technical method used by Campens, Devereux & Gautier.

1 Sheikhzadeh, S. et al., 2012. A simple clinical model to estimate the probability of Marfan syndrome. QJM : monthly journal of the Association of Physicians, 105(6), pp.527–535.

2 AHT - Arterial Hypertension: Blood pressure >140/90 mmHg or antihypertensive treatment

3 Systemic score and/or bifid uvula, cleft palate, hypertelorism, clubfoot, early onset and widespread osteoarthritis

4 Child with systemic score 3 or 4: consider re-evaluation after 3-5yrs until age 18

5 Limited to familial cases, probands with additional systemic features, young probands (<30yo) with TAA & associated isolated AR.

6 Min 1 person first or second degree family
- TAA or dissection (suspicion) <60yr
- LVOT abnormality
- Sudden death <45yr

7 BAV panel: SMAD6, NOTCH1, ROBO4, TBX20
EL panel: LTBP2, ADAMTSL4, FBN1

8 Should include:
- ongoing access to services on demand
- ongoing support of local medical teams
- individual follow up as required for new clinical indications such as pregnancy, new symptoms assessment…

9 CARDIOVASCULAR FOLLOW UP
- Patient
  - Mutation known >> According to diagnosis guidelines
  - Mutation unknown >> According to clinical findings
- Family
  - Mutation known >> Cascade screening
  - Mutation unknown >> TTE starting from 10yo. Repeat every 5-10y. Every 2y with AHT.

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to patients with rare vascular diseases

VASCERN, the European Reference Network on Rare Multisystemic Vascular Diseases, is dedicated to gathering the best expertise in Europe in order to provide accessible cross-border healthcare to patients with rare vascular diseases (an estimated 1.3 million concerned). These include arterial diseases (affecting aorta to small arteries), arterio-venous anomalies, vascular malformations, and lymphatic diseases.

VASCERN currently consists of 31 highly specialised multidisciplinary Healthcare Providers (HCPs) from 11 EU Member States and of various European Patient Organisations and is coordinated in Paris, France.

Through our 5 Rare Disease Working Groups (RDWGs) as well as several thematic WGs and the ePAG – European Patient Advocacy Group, we aim to improve care, promote best practices and guidelines, reinforce research, empower patients, provide training for healthcare professionals and realise the full potential of European cooperation for specialised healthcare by exploiting the latest innovations in medical science and health technologies.

More information available at: https://vascern.eu

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