TRICUSPIC STENOSIS

ETIOLOGIES

- Almost always **rheumatic** (15% patients with rheumatic heart disease – 5% symptomatic)
  - Associated with **TR**
  - Mitral valve involvement
  - India, Pakistan, Equator
  - Fusion and shortening of chordae tendineae and fusion of leaflet at their edges – valve calcifications are rare
  - Women >> men
- **Obstruction to RA emptying**
  - Congenital tricuspid atresia
  - RA tumor
  - Carcinoid – TR
- **Obstruction of RV inflow**
  - Endomyocardial fibrosis
  - Vegetation on tricuspid valve
  - PMP lead
  - Extracardiac tumor
- **RA dilated and wall thickened, passive congestion, enlargement of liver and spleen**

PATHOPHYSIOLOGY

- Diastolic pressure gradient between RA and RV is **augmented** in inspiration or exercise
- Mean gradient 5 mmHg is sufficient to elevation RA pressure = systemic venous congestion (ascites, edema, JVP elevated)
- \( \uparrow a \) wave
- \( \downarrow \) CO
- Gradient of **2 mmHg** = diagnostic of TS
  - \( \uparrow \) Inspiration, exercise or rapid infusion on fluids

CLINICAL PRESENTATIONS

- \( \downarrow \) CO: **fatigue, discomfort by hepatomegaly, ascites, anasarca**
- Discomfort in the neck (PVC)
- Left HF (dyspnea, orthopnea, PND) **rarely present** even with presence of MS because of TS that prevents blood to go in pulmonary circulation

**Diagnosis of TS is commonly missed because of presence MS**
*Suspicious if elevated PVC in MS/TS without pulmonary hypertension*

PHYSICAL EXAM

- Jugular veins
  - Tall \( a \) wave (sinus rhythm)
  - Y descent is slow
- Presystolic hepatic pulsation
- Anasarca, ascites
- Diastolic thrill is palpable LLSB - é inspiration
- Auscultation:
  - OS
    - AFTER mitral OS
    - LLSB
  - Diastolic murmur LLSB 4th space, soft, high pitch, Presystolic component more scratchy, crescendo-decrescendo before S1
  - Maneuvers
    - ↑: Inspiration, leg raising, NO, squatting, isotonic exercise, Mueller (forced inspiration against a closed glottis)
    - ↓: Expiration, Valsalva

### ECHOCARDIOGRAPHY

Defines the anatomy of the valve, the severity of the stenosis, concomitant TR, left-sided disease.

- Diastolic doming of the leaflets, especially the **anterior leaflet**
- Thickening and restricted motion of other leaflets
- “**Frozen appearance**” in carcinoid syndrome
- Reduced separation of tips of leaflets
- Reduced diameter of tricuspid orifice

<table>
<thead>
<tr>
<th></th>
<th>Severe</th>
</tr>
</thead>
<tbody>
<tr>
<td>Mean pressure gradient (mmHg)</td>
<td>≥ 5</td>
</tr>
<tr>
<td>Inflow time-velocity integral</td>
<td>&gt; 60 cm</td>
</tr>
<tr>
<td>Time to half pressure</td>
<td>≥ 190 ms</td>
</tr>
<tr>
<td>Valve area by continuity equation</td>
<td>≤ 1 cm²</td>
</tr>
</tbody>
</table>
| Suggestive of severe TS  | Moderate to severe enlarged RA
                          | Dilation IVC        |

★ **Suggested reference:**

### ELECTROCARDIOGRAPHY

- RA enlargement
- Biatrial enlargement if MS
  - NO RV hypertrophy

### CHEST X-RAY

- Cardiomegaly
- RA enlargement
- Dilated superior vena cava and azygos vein
- Vascular changes in lung if MS
CATHETERIZATION

Useful in patients with severe TS when symptoms and noninvasive imaging data are discordant.

MANAGEMENT

Medical
- Water and sodium restriction
- Diuretics (diminish hepatic congestion)

Surgical
- Criteria
  - Mean diastolic pressure gradient $> 5$ mmHg
  - Tricuspid orifice $< 2.0$ cm$^2$
- Valvotomy – may induce TR
  - Convert tricuspid valve into bicuspid by opening 2 commissures = less TR
- Bioprosthesis over mechanical prosthesis because of high risk of thrombosis and longer durability of bioprosthesis in RV

Content of this summary from these references: