Background
- 7% of congenital heart disease
- Generally presents:
  - Neonates: shock/ heart failure
  - Older children: hypertension/ incidental finding
- Treated with either cardiac catheterisation (balloon +/- stent) or surgery
- There is very little in the literature on delayed diagnosis of aortic coarctation and its outcomes.

Objective
Access the incidence of coarctation, investigations, management and morbidity choices of late coarctation in a tertiary cardiac centre.

Methods
- Retrospective review
- Primary diagnosis of aortic coarctation
- 3-16 years age Time span: 2000 – 2015
- Database: departmental cardiac database
- Recorded:
  - Presentation details
  - Referral reasons
  - Demographics
  - Clinical data
  - Investigations
  - Outcomes
- Exclusions: any patients with additional cardiac defects were excluded (bicuspid aortic valve aside).

A cut-off of three years was used as the Descending aorta is ~50% of adult diameter at this age.

Results

<table>
<thead>
<tr>
<th>Referrals</th>
<th>Reasons for referral</th>
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</thead>
<tbody>
<tr>
<td>Murmur</td>
<td>17 (36%)</td>
</tr>
<tr>
<td>Hypertension</td>
<td>17 (36%)</td>
</tr>
<tr>
<td>Absent/weak femoral pulses</td>
<td>10 (21%)</td>
</tr>
<tr>
<td>Dizziness/ Headache</td>
<td>4 (9%)</td>
</tr>
</tbody>
</table>

Presentation:
- Murmur: 87%
- Weak/ absent femoral pulses: 89%
- Abnormal renal function: 22% (possibly representing abnormal renal perfusion)

Hypertension:
- 100% on medication
- I- blockers: 84%

INVESTIGATIONS

Echocardiography:
- Documented echocardiograms: 45/47
- Pathology:
  - Coarctation seen: 74% had visible coarctation
  - Suggestive of coarctation: 13%
  - Couldn’t be identified: 13%

Chest Radiograph - rib-notching: 54%

Cross-sectional Imaging:
- 26/47 patients (55%)
- MRI: 20/26 (77%)
- CT Angiogram: 6/26 (23%)

Cardiac Catheter:
- 38 patients (81%) – balloon and/or stent
  - Diagnostic: 43/8 – 10.5%: Surgical intervention

Repeat interventions:
- 11/34 (32%): repeat intervention
- Somatic growth or stenosis
- 1-4 interventions, average: 2

Angioplasty (primary): 42% (median age: 5.5 years)
- Stent: 58% (median age: 13 years)

Surgical:
- 7 patients (15%), median age 5 years
- 4 had prior diagnostic cardiac catheters
- None needed repeat intervention

Conservative:
- 2 patients (4%)

COMPLICATIONS
- 1 patient - balloon rupture with no sequelae
- No evidence of spinal ischaemia/ permanent renal pathology
- No cardiac-related mortality

FOLLOW UP
Median Duration:
- Catheter intervention: 38 months from 1st intervention
- Surgical Intervention: 71 months which corresponds with these being younger patients having surgery

Freedom from catheter intervention was ~6 years

Hypertension:
- 51% on anti-hypertensive medication at last review
  - Post-surgical: 4/11 (36%)
  - Post-catheter: 20/34 (36%)

Take home messages
- 25% of Aortic coarctation present late
- Presentation: hypertension or murmur
- Weak femoral pulses and/or radio-femoral delay
- Chest X-Ray may be helpful (rib-notching)
- Echocardiography does not always image the aortic anatomy
  - Cross-sectional imaging:
    - Essential for diagnosis
    - Important consideration post-intervention to reliably assess the arch.
- Catheter intervention:
  - Viable alternative to surgery
  - Patterns:
    - Angioplasty in younger children
    - Stents in older children
  - Higher incidence of reintervention
- There is a low complication rate for catheter and surgical intervention
- Hypertension appears to be less common following surgery

References:
Park’s Pediatric Cardiology for Practitioners. 6th Edition. Park M.