Unexplained Hypertension In A 7 Year Old Patient Presenting For Elective Tonsillectomy

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Abstract:
Introduction: Coarctation of the aorta is a narrowing of the distal segment of the aortic arch. It is commonly diagnosed after the detection of upper extremity hypertension or diminished femoral pulses. Early diagnosis and treatment is critical due to reported increased morbidity with delayed repair.

Objective: To report a case of coarctation of the aorta presenting as preoperative hypertension in a 7 year old male. Our purpose is to discuss the evaluation of pediatric hypertension as well as review various clinical aspects associated with aortic coarctation.

Case Report: A 7 year old healthy male presented to our preoperative area for elective tonsillectomy and adenoidectomy. Upon initial preoperative exam by nursing staff, an upper extremity blood pressure of 149/88mmHg was ascertained. Further questioning elucidated that the patient was extremely anxious. He was treated with oral midazolam. His blood pressure decreased to 118/57mmHg and surgery proceeded.

Discussion: Up to 85% of children with hypertension have an identifiable, potentially correctable cause. The differential diagnosis of pediatric hypertension consists of renal artery stenosis, renal parenchymal disease, aortic coarctation, hyperthyroidism, hyperaldosteronism, Cushing’s syndrome, pheochromocytoma, and sequelae of hypertension.

Conclusion: A growing occurrence for children. The future goals should be focused towards the development or diminished femoral pulses.

Introduction:
-Coarctation of the aorta is a narrowing of the distal segment of the aortic arch and accounts for 5-8% of all congenital heart defects.
-40% present as neonates with signs of heart failure and cardiovascular collapse while the remainder of patients are otherwise asymptomatic.
-Commonly diagnosed by the detection of upper extremity hypertension or diminished femoral pulses.

Objective:
-To report a case of coarctation of the aorta presenting as preoperative hypertension in a 7 year old male. Our purpose is to discuss the evaluation of pediatric hypertension as well as review various clinical aspects associated with aortic coarctation.

Case Report:
Pre-operative:
-A 7 year old healthy male presented to our preoperative area for tonsillectomy and adenoidectomy.
-Upon initial preoperative exam by nursing staff, an upper extremity blood pressure of 149/88mmHg was ascertained.
-Further questioning elucidated that the patient was extremely anxious. He was treated with oral midazolam.
-His blood pressure decreased to 118/57mmHg and surgery proceeded.

Intra-operative:
-Patient was stable for the case duration with measured automated BP cuff in the right arm ranging from 120-136mmHg systolic and 70-85 mmHg diastolic.
-Post-operative:
-Patient was admitted to the PACU. Initial upper extremity BP was 133/95mmHg, followed by 158/121mmHg.
-After physical exam and further evaluation, the anesthesia staff requested both upper and lower extremity blood pressures to be measured, which revealed a major discrepancy between the upper extremity (163/97, 158/68, 139/62, and 143/77) and lower extremity blood pressures (83/61, 106/63, 99/64, and 84/52).
-A cardiology consultation was ordered. A clinical exam, echo and CT angiography were consistent with severe distal aortic arch coarctation.

Treatment:
-The patient underwent balloon angioplasty and intravascular stent placement to the coarcted segment of the aorta (Fig. 2).

Discussion:
-Up to 85% of children with hypertension have an identifiable, potentially correctable cause.
-Coarctation of the aorta is the 2nd most common cause of hypertension in children.
-DDX of Pediatric Hypertension: Renal artery stenosis, renal parenchymal disease, coarctation of the aorta, hyperthyroidism, hyperaldosteronism, Cushing’s syndrome, pheochromocytoma, and sequelae of hypertension.

References:

Figure 1: CT CTA Chest 3D: Coarctation Of The Aorta
CT CTA chest 3D reconstruction depicting narrowing of the thoracic aorta at the junction of the aortic arch and descending aorta. Some post-stenotic dilatation is observed in the proximal descending aorta.

Figure 2: Coarctation Of Aorta Dilated With A Stent
1. Pre-procedure 2. Post-procedure

Figure 3: CT CTA Chest 3D: Coarctation Of The Aorta
Figure 4: Figure 4: Coarctation Of The Aorta

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Conclusion:
Early diagnosis and treatment is critical due to reported increased morbidity with delayed repair.

Treatment:
The patient underwent balloon angioplasty and intravascular stent placement to the coarcted segment of the aorta (Fig. 2).

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