

UNDIAGNOSED RENAL ARTERY STENOSIS IN A 19-MONTH-OLD UNDERGOING MRI

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Abstract

Hypertension in the pediatric population is a rare disease which, when present, is usually secondary hypertension. We report a case of renal artery stenosis in a 19 month old patient that presented as refractory hypertension under anesthesia for MRI.

Introduction

Hypertensive crisis is rare in the pediatric population and, if present, is usually secondary hypertension¹. Measuring blood pressure in a child can cause anxiety to the child, which alongside the rarity of hypertension in pediatric population, can cause healthcare professionals to wave measuring blood pressure during regular doctor visits or ignore an abnormal measurement as spurious. We present a case of hypertensive crisis during an MRI in one of the youngest patients to be reported with an undiagnosed renal artery stenosis.

Case Report

This is a case of a 19 month old female patient who presented for an elective outpatient MRI of the brain as a part of a failure to thrive work up. The blood pressure was unable to be obtained during the pre-anesthetic evaluation despite repeated attempts because the patient was very anxious and irritated by the cuff. Anesthesia was induced by mask with sevoflurane in a mixture of oxygen and nitrous oxide. After induction, standard monitors were placed, IV access obtained and an oxygen nasal cannula placed. Anesthesia was maintained with propofol infusion at a rate of 200 mcg/kg/min. After induction, the blood pressure could not be measured right away because the cuff kept failing. The first blood pressure reading, achieved 5 minutes after induction, was 202/133 mmHg, with heart rate of 95 bpm and O₂ sat of 100%. Subsequent blood pressure readings remained high, with the lowest BP recorded being 155/105 mmHg. The anesthesia team contacted the pediatric intensivists and informed them of the severe hypertension and the need for PICU admission for management of high blood pressure and for investigation of the etiology. At the end of the MRI, the patient was awakened, found to be neurologically intact and transferred to PICU where she was started on a nicardipine infusion (dose range from 0.5 to 2 mcg/kg/min) to control the hypertension. Upon revisiting with the parents, we learned that blood pressure measurement had been attempted during her doctor's visits but had never obtained. This had been attributed to her anxiety. Initial work up for hypertension included serum catecholamine, Doppler of renal arteries, and an endocrinology work up for failure to thrive including GH and thyroid

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hormone, which all came back normal. A MRA of the abdomen showed narrowing of proximal aspect of right renal artery. That finding prompted an angiogram, which showed bilateral renal artery stenoses (RAS). Conventional balloon angioplasty was unsuccessful and the patient was transferred to another facility more specialized in renal artery stenosis (RAS) cases for further surgical management.

Discussion

We describe a case of undiagnosed hypertension in a 19 month old patient discovered during anesthesia for MRI of the brain and found to be secondary to renal artery stenosis (RAS). Severe hypertension in a child could contribute to failure to thrive for which this patient presented. Childhood hypertension is very rare and, when present, is usually the secondary type of which RAS is the most common cause^{1,2}. Usual etiologies of hypertension identified in a child undergoing anesthesia are anxiety, light sedation, excessive stimulation, medication-induced or equipment error such as inappropriate cuff size². Most of the time, this kind of hypertension is transitory and resolves with a deeper level of anesthesia or by correcting an equipment problem. Whenever hypertension persists, one should

think of secondary causes like RAS, coarctation, renal parenchymal disease and neuroendocrine tumors³. In our patient, BP was unable to be obtained until after anesthesia induction. When a measurement was obtained, the severe BP elevation in spite of the non-stimulating procedure and adequate depth of propofol anesthesia raised concerns for true hypertension. We suspected that this was a secondary HTN and arranged for a PICU admission for further management and work up of hypertension. Because of the unknown etiology, the team did not attempt to aggressively lower the BP until intensive care assessment and therapy could be instituted.

Conclusion

In conclusion, despite the fact that a hypertensive crisis is rare in children, it is a very serious but treatable condition most of the time. The anesthesiologist should have a low threshold of suspicion when faced with perioperative hypertension refractory to sedatives. It is always advisable to try to obtain a pre-operative blood pressure measurement when possible. Moreover, frequent inability to obtain BP measurement by primary care providers may be a red flag to a more serious condition.

References

1. PARK SH, LEE YS, MIN TJ, KIM WY, KIM JH, PARK YC: Anesthetic management of hypertensive crisis in a three-year-old patient with undiagnosed severe renal artery stenosis. *Korean L Anesthesiol*; 67:275-278, 2014.
2. PAIX AD, RUNCIMAN WB, HORAN BF, CHAPMAN MH, CURRIE M: Crisis management during anesthesia: hypertension. *Qual Saf Health Care*; 14:e 12, 2005.
3. CHANDAR J, ZILLERUELO G: Hypertensive crisis in children. *Pediatric Nephrol*; 43:1-3, 2012.