

Perioperative control of blood pressure using esmolol in a child with familial paraganglioma



Amir Babiker^{1,2,3}, Wejdan Al Hamdan², Abdulhadi Habeb⁴, Khalid AlFakeeh^{1,3}, M Al Namshan^{1,2,3}, Talal Al Harbi^{1,2,3}, Mohammed Al Dubayee^{1,2,3}, Fahad Al Juraibah^{1,2,3}, Abdul Aleem Attasi^{1,2,3}

1. Department of Pediatrics, Ministry of the National Guard - Health Affairs, Riyadh, Saudi Arabia
2. College of Medicine, King Saud bin Abdulaziz University for Health Sciences, Riyadh, Saudi Arabia
3. King Abdullah International Medical Research Center, Riyadh, Saudi Arabia
4. Department of Pediatrics, Ministry of the National Guard - Health Affairs, Madinah, Saudi Arabia

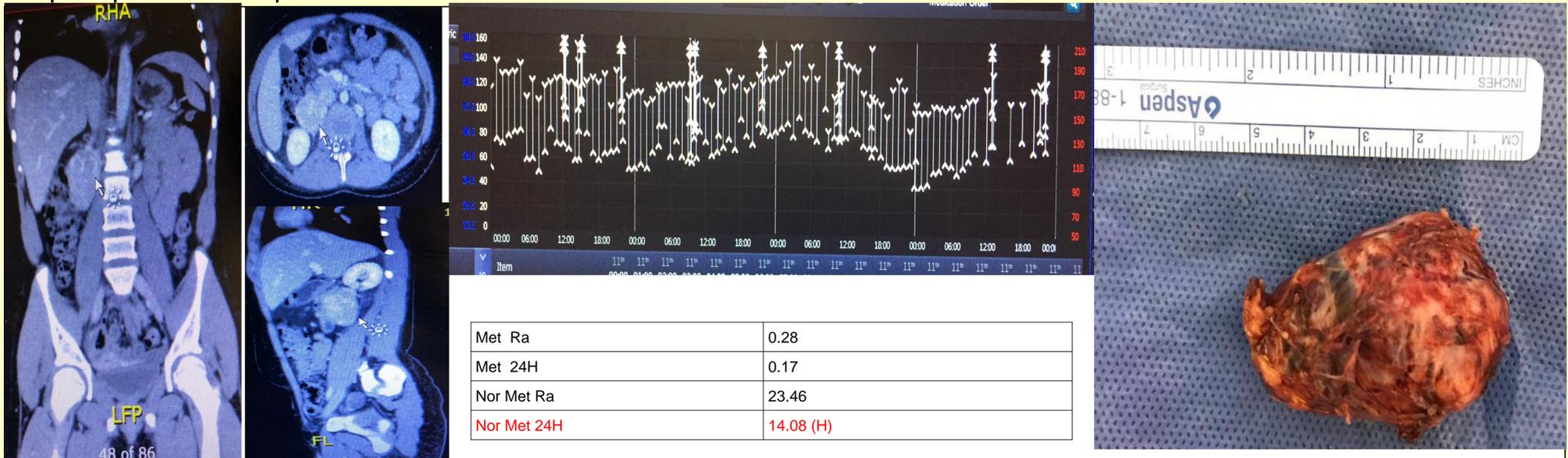


OBJECTIVES

- Paragnagliomas/pheochromocytomas: are rare neuroendocrine tumors originate from paraganglionic cells. They are extra or intra-adrenal in site (following the rule of 10%).
- Antihypertensive medications: Long acting alpha and beta blockade useful preoperatively but challenging postoperatively.
- We present a case of familial paraganglioma successfully treated by esmolol and other antihypertensive medications without associated perioperative complications.

CASE REPORT

- A 13-year-old girl, known case of bronchial asthma, presented with classic symptoms and signs of Pheo/Paragnagliomas.
- Both her father and brother have similar masses, and CT abdomen showed right-sided paravertebral mass, therefore, treated as familial Paragnaglioma.
- Prazocin was started but she had uncontrolled fluctuations of a high blood pressure (BP). She initially developed a serious reaction to atenolol, therefore switched to esmolol that successfully controlled her BP alongside prazosin and intermittent doses of hydralazine with minimal fluctuations in BP.
- She then underwent laparoscopic surgery on esmolol and the diagnosis was confirmed by histopathology and genetic study.



DISCUSSION

- Preoperative management using alpha and beta blockade is crucial to prevent the intraoperative complications in Pheochromocytoma/Paragnaglioma.
- Phenoxybenzamine, a long acting non-selective alpha blockade, has been widely used since 1950s. In addition, prazosin, a selective alpha 1 blockade, has been used in favor due to its short action, so it causes fewer side effects postoperatively.
- Beta blockade are generally used to suppress tachycardia, though they also help in control of BP, after alpha-blockers being started. There is no evidence to support the use of beta 1 blockade such as atenolol over the non-selective beta-blockers, which include propranolol.
- Two previous reports suggested the use of esmolol in adults. Esmolol showed a good effect as adjuvant therapy to alpha-blockers and its very short half-life of approximately 3 minutes helped to avoid post-operative complications due to sudden intravascular volume and pressure changes that usually requires meticulous care and possible need of using presser agents.

CONCLUSIONS

Esmolol is titrable, effective and can be weaned rapidly helping to avoid post-operative complications in pediatric Pheochromocytoma/Paragnaglioma. Therefore, it can be a good alternative to propranolol and atenolol that are routinely used in these cases. Further study on its use is needed to confirm this observation.

