Perioperative Management of Intrapericardial Paraganglioma: The Commonness and Differences with Pheochromocytoma

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Background: Both paraganglioma and pheochromocytoma are catecholamine-secreting tumors that may cause secondary hypertension. Intrapericardial paragangliomas (IPs) are very rare extra-adrenal tumors that originate from the neural crest and are located adjacent to the great vessels or heart[1]. Surgical resection is the main method of treatment[2]. This study is aimed to summarize the experience of perioperative management of IP and compare the commonness and differences between it and adrenal pheochromocytoma.

Method: The medical records of patients diagnosed as IP and received tumor resection from year 2001 to 2013 in Peking Union Medical College Hospital were reviewed. Data in respect of intraoperative anesthetic management, especially vasopressor administration after tumor removal, were analyzed and subsequently compared with patients underwent pheochromocytoma resection during the same period of time in PUMCH[3].

Results: In total 6 IP patients had successful tumor resection (Table 1), while 252 patients underwent pheochromocytoma resection from year 2001 to 2013. All 6 IP cases were performed under general anesthesia with cardiopulmonary bypass. After tumor removal and CPB weaning off, the IP patients all required large doses of vasopressor support (Norepinephrine 0.05-0.1ug/kg/min; dopamine 5-10ug/kg/min), and the time for vasopressor administration was significantly longer than pheochromocytoma patients (48.3±20.9hrs vs 8.3±11.5hrs, $P<0.01$). In addition, the operation time (355.0±135.9mins vs 144.8±69.3mins, $P<0.01$) and postoperative ICU stay (3.3±1.5days vs 1.5±2.0days, $P<0.05$) for IPs are both significantly longer than pheochromocytoma.

Conclusions: Cardiopulmonary bypass is essential to maintain hemodynamic stable for IP resection. Compared with pheochromocytoma, the operation of IP resection is far more complicated and IP patients need more vasopressor support and intensive care postoperatively. The perioperative management of IP is still a big challenge to both the surgical and the anesthetic team.

Table 1. Patient Information of Intrapericardial Paragangliomas

No. of Pts	Age (years)	Weight (kg)	Sex (M/F)	Catechol. Secretion	Tumor Location	Coronary Angiography
1	17	63	M	NE, DA	anterior wall of aorta	vascularization to the tumor from the right coronary artery which was involved and totally obstructed at its beginning
2	35	47	F	NE, DA	left atrium	dense vascularization from left circumflex branch of coronary artery
3	19	62	M	NE, DA	aortic root	Left internal mammary artery and the sinuatrial node branch of right coronary artery were the feeding
4	44	65	M	NE	1) right atrioventricular groove; 2) right pulmonary artery	vascularization from right coronary artery and left circumflex artery; 80% stenosis of left anterior descending coronary artery
5	50	68.5	M	NE	between left and right atrium	Vascularization mostly from sinoatrial node artery of right coronary artery; myocardial bridge in left anterior descending artery with 60% stenosis in systolic period
6	45	75	M	NE	aortic root	Vascularization from left anterior descending artery(60%), left main artery(20%) and left circumflex artery(10%)

Catechol.: catecholamine; NE: Norepinephrine; DA: Dopamine.

References

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