O-10

Single Institution Retrospective Case Cohort of Adult Cyanotic Congenital Heart Disease and Associated Pheochromocytoma and Paraganglioma

R. Benson Jones Jr.[1], Bonita Bennett[2], Debbie Cohen[2].

[1]Division of Endocrinology, Diabetes, Metabolism, Perelman School of Medicine at the University of Pennsylvania, Philadelphia, PA; [2]Division of Renal Electrolyte and Hypertension, Perelman School of Medicine at the University of Pennsylvania, Philadelphia, PA.

BACKGROUND

Improved management for patients with cyanotic congenital heart disease (CCHD) has led to prolonged lifespan and an increase in patients with CCHD presenting with pheochromocytoma and paraganglioma (PPGL) has been noted. PPGL susceptibility genes including *VHL, SDH(x), FH, EPAS1* have been connected to a common signaling pathway that activates hypoxia-inducible factors. 4 of 5 patients with CCHD and PPGL were previously noted to have a somatic gain-of-function mutation in *EPAS1* encoding hypoxia-inducible factor 2α. One hypothesis is that the hypoxic environment positively selects for cells with gain-of-function mutations predisposing patients to develop PPGL even when environment is no longer hypoxic. PPGL was diagnosed 13-53 years after surgical correction of CCHD in these patients. We report a case series on 9 CCHD/PPGL patients treated at our institution.

METHODS

A retrospective chart review of patients with CCHD treated for PPGL at our institution was performed describing demographics, CCHD and related treatments, symptoms of PPGL and Hct/SpO_2 at diagnosis, tumor size, catecholamine biochemistries, imaging, and genetic analysis when available.

RESULTS

Four of 9 patients were female. Average age of diagnosis of PPGL was 30.7 years (SD 9.6 years, range 15-47 years). CCHD anomalies included Tetralogy of Fallot (2 patients), hypoplastic right ventricle (2 patients) and hypoplastic left ventricle (2 patients). Most surgeries to correct CCHD were performed within days of life; the latest reported surgical procedure was at age 12, 1 patient had a subsequent heart transplant. Patients experienced hot flashes (5), arrhythmias (4), hypertension (4), abdominal pain and nausea (2), and headaches (1); one patient was asymptomatic. Hct ranged from 38%-53%; SpO2 ranged from 85%-99%. Three patients had multiple PPGLs; two had metastatic or recurrent PPGL. Metanephrines at diagnosis ranged from normal to 23x the upper limit of normal. Catecholamines ranged from normal to 16x the upper limit of normal. The locations of PPGL included 6 mediastinal and abdominal paraganglioma (PGLs), 5 head and neck PGLs, and 3 pheochromocytomas. Tumor size ranged from 9-65mm at maximum diameter on pathology. 6/9 patients had germline mutation testing; one SDHB mutation, one SDHA mutation of undetermined significance, and one BARD1 mutation were identified. A table including each patient will be presented.

CONCLUSIONS

The extended timeframe between onset of cyanosis and development of PPGL supports long term regular monitoring of CCHD patients to detect PPGL. We suggest screening with plasma metanephrines and catecholamines at age 15 and every 3-5 years after.

ABSTRACT ID 23726