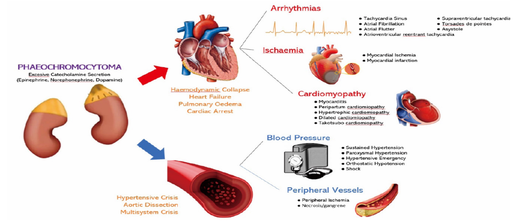
Pulseless Electrical Activity (PEA) Associated with Pheochromocytoma: A Report of Two Cases

Salma Hassan[1], Khuaten Maaneb de Macedo[1], Matthew Wheelwright MD, PhD[2], Sayeed Ikramuddin MD, MHA[2], James Harmon MD, PhD[2]

[1]University of Minnesota Medical School, [2]University of Minnesota Department of Surgery

CARDIAC MANIFESTATIONS OF PHEOCHROMOCYTOMA



PHEOCHROMOCYTOMA BACKGROUND

- Rare, catecholamine-producing adrenal tumor
- Clinical presentation - refractory hypertension, headaches, palpitations, diaphoresis, cardiac complications
- Cardiac complications:
  - Heart failure, ischemic heart disease, stress cardiomyopathy, arrhythmias, etc.
  - Rare incidences of cardiac arrest, however PEA arrest as a specific form of cardiac arrest on initial presentation is rare
- We report 2 cases of patients suffering from PEA arrest in the setting of pheochromocytoma

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CASE #1

A 60-year-old-man with a history of refractory hypertension underwent cervical spine surgery

- Post-operative course:
  - Patient appeared disoriented and short of breath
  - Found to be apneic in PEA arrest
  - Completed one round of CPR with intubation
  - Return of spontaneous circulation in 5 minutes
- Evaluation included CT abdomen/pelvis → right adrenal mass identified
- Plasma free normetanephrines and norepinephrines were elevated
- Patient underwent laparoscopic posterior adrenalectomy, which he tolerated well without complications

CASE #2

A 44-year-old man presented with nausea, dizziness, and a systolic BP >200

- CT demonstrated a left adrenal mass, confirmed to be a pheochromocytoma
- During adrenalectomy, he suffered a PEA arrest, and the procedure was terminated
- Post-arrest Echocardiogram demonstrated apical hypokinesis and stress cardiomyopathy with a LVEF of 30-35%
- Return to the operating room was complicated by hypertensive crisis and case was terminated
- Laparoscopic posterior adrenalectomy was successful on the third attempt
- Following resection of the tumor, the patient's left ventricular function returned to normal with LVEF of 60 – 65%

Figure 1 and 2. Diagnostic Imaging

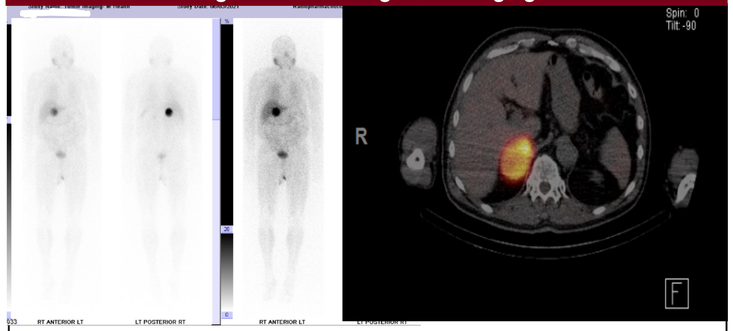


Figure 1, 2: Nuclear medicine (NM I-123 MIBG) scan identified hyperfixation in the right adrenal gland, compatible with pheochromocytoma.

Figure 3. Gross Adrenal Specimen

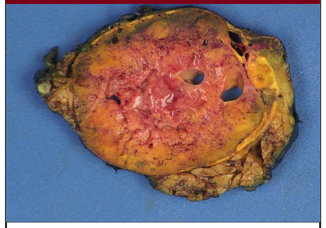


Figure 3: Macroscopic examination of right adrenalectomy specimen, measuring 9.1 x 6.2 x 4.2 cm.

Figure 4. Patient Positioning

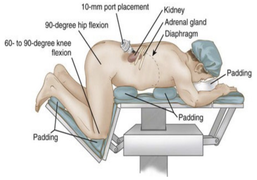


Figure 4: Patient positioning for laparoscopic adrenalectomy

CONCLUSION

- Although presentation with PEA is rare, approximately 12% of patients with pheochromocytoma will demonstrate some form of cardiac complication
  - Wide arrange of dysrhythmias are described in association with pheochromocytoma
  - Stress cardiomyopathy can also be seen, which resolves after resection of the pheochromocytoma
  - Episodes of PEA as a presenting sign have not been well documented
- Curative therapy requires early identification, strict medical management, and surgical resection to limit long-term cardiac complications
- Management by an interdisciplinary team
  - cardiology, endocrinology, surgery, and anesthesiology, is essential to avoid cardiac complications associated with pheochromocytoma