Pheochromocytoma

Pheochromocytoma is caused by a tumor in the adrenal medulla. The tumor affects the chromaffin cells and increases the release of catecholamines. Symptoms of pheochromocytoma include episodic hypertension, diaphoresis, and abdominal or chest pain. Interventions include surgery to remove the adrenal tumor and medications, such as alpha-adrenergic blockers, beta-adrenergic blockers, and metyrosine (Demser). Since pressure to the area may release catecholamines and cause severe hypertension, avoid palpating the patient's abdomen.



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Cause/Mechanism

Adrenal Medulla Tumor
Adrenal Medusa with Tumor
Pheochromocytoma is caused by a tumor in the adrenal medulla that affects the chromaffin cells. As a result, an excess of catecholamines are produced and may cause severe effects such as hypertension.

Increased Catecholamines
Up-arrow Cat-cola
The affected chromaffin cells cause increased catecholamine production. Catecholamines include epinephrine and norepinephrine. An increase in catecholamine production leads to severe hypertension, tachycardia, and profuse sweating.

Assessment

Episodic Hypertension
Episode causing Hiker-BP
Severe episodic hypertension is a defining characteristic of pheochromocytoma. Untreated pheochromocytoma may progress to hypertensive encephalopathy, diabetes, cardiomyopathy, and death. Classic manifestations related to pheochromocytoma include pounding headache, tachycardia, palpitations, and profuse sweating. Monitoring the patient's blood pressure is critical for early detection and intervention of severe hypertension.

Diaphoresis
Sweaty-sweatband
Profuse sweating, or diaphoresis, is caused by increased catecholamine production related to an adrenal medulla tumor. In addition to a severe pounding headache and tachycardia, diaphoresis is a part of the classic triad of symptoms associated with pheochromocytoma.

Abdominal or Chest Pain
Abdominal and Chest Pain-bolt
Patients with pheochromocytoma may experience unexplained abdominal or chest pain. Attacks may be caused by medications such as tricyclic antidepressants, antihypertensives, opioids, and radiologic contrast media.

Interventions

Surgery
Surgeon
Surgical removal of the adrenal tumor is the primary treatment of pheochromocytoma. Laparoscopy is the most common approach to removing the tumor. Although removal of the adrenal tumor usually alleviates hypertension, a small percentage of patients still experience hypertension despite surgery.

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Antihypertensives

Ant-tie-hiker-BP

Beta-adrenergic blockers such as propranolol are administered after adequate alpha-adrenergic blockade. Since unopposed alpha-adrenergic stimulation may cause hypertensive crisis, it is important to administer beta-blockers after sufficient alpha-adrenergic blockade. Beta-blockers are indicated to decrease tachycardia and other dysrhythmias. Additionally, calcium channel blockers like nicardipine may also be used as antihypertensive. Since the medications may cause orthostatic hypotension, instruct the patient to change positions slowly with caution.

Phenoxybenzamine

Phantom-ox

Alpha-adrenergic blockers such as phenoxybenzamine (Dibenzyline) are indicated to treat patients with pheochromocytoma. The medication is administered 7-10 days preoperatively to decrease the patient's blood pressure and alleviate symptoms caused by excessive catecholamines.

Metyrosine (Demser)

Meat-tire

The administration of metyrosine (Demser) is indicated for patients with pheochromocytoma who are not appropriate candidates for surgery. The medication is used to decrease the tumor's catecholamine production.

Considerations

Do Not Palpate Abdomen

No-sign Paw on Abdomen

Avoid abdominal palpation in patients suspected with pheochromocytoma. Palpating the abdomen with pheochromocytoma may cause a sudden release of catecholamines resulting in severe hypertension.

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