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Correlation between the Level of Metanephrines and the Size of Pheochromocytoma

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Introduction
Pheochromocytomas are rare neuroendocrine catecholamine-producing tumors that arise from either the adrenal medulla (PHEO) or extra-adrenal paraganglionic tissues (paraganglioma/PGLs). PHEO is responsible for about 0.01-0.1% of the cases of hypertension. Assessment of the plasma/urinary levels of metanephrines (catecholamines metabolites) is now considered the gold standard for the diagnosis of PHEOs. In this study, we aimed to investigate the role of the plasma and 24-hour urinary metanephrines levels in the diagnosis of PHEO/PGLs.

Patients and Methods:
Retrospective review of 25 patients diagnosed with PHEO/PGLs. We measured the plasma and 24-h urinary levels of metanephrines and normetanephrines. The data were compared with another set of 25 patients with other adrenal pathologies. The correlation coefficient between the tumor sizes and the plasma/24-hour urinary metanephrines levels was calculated.

Results
The mean tumor size was 4.63cm. The sensitivity and specificity rates for plasma metanephrines were (80-92%) and (92-96%), respectively, while for 24-hour urinary metanephrines were (80-90%) and (95-100%), respectively. We found a strong positive relationship between the tumor size and the plasma levels of normetanephrine ($r = 0.518$, $P < 0.01$), and metanephrine ($r = 0.577$, $P < 0.01$). While the relation with the 24h urinary concentrations of normetanephrine ($r = 0.384$, $P = 0.01$) and 24-hour urinary metanephrine ($r = 0.138$, $P < 0.01$).

Conclusion
Plasma/24-hour urinary metanephrines are of great value in the diagnosis PHEOs/ PGLs as they are continuously produced by the tumor. There are strong relations between the size of these tumors and the plasma and urinary concentration of these metabolites, which can help to predict the size of the tumor even before imaging.

Biography

Emad is a general surgery registrar, mainly works in endocrine and general surgery. He is interested in endocrine cancer research. He has at least 9 published papers. Through his work he hopes that his research activity would be valuable to help people all over the world. He is currently working as a General Surgeon in the James Cook University Hospital, England in UK.

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