• CASE REPORT •

Cutaneous Adrenal Cortical Carcinoma Metastasis in a 6 year-old Boy

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We report the case of a six year-old boy with a history of adrenal cortical carcinoma presenting with cutaneous metastasis. Due to the low incidence of cutaneous metastasis arising from adrenal cortical carcinoma, its diagnosis can be challenging based solely on histological analysis. Yet, the clinical history in combination with an immunohistochemical panel consisting of melan-A, alpha inhibin, D11, caretinin, neuron specific enolase, synatophysin, and chromogranin, can be useful in differentiating it from other tumors with similar cytomorphology. [*P R Health Sci J 2010;3:330-331*]

Key words: Adrenal cortical carcinoma, Cutaneous metastasis, Immunohistochemistry

Adrenal cortical carcinoma (ACC) is an uncommon aggressive malignancy with a bimodal age distribution with a first peak in childhood and a second in the fifth decade. Its prognosis largely depends on tumor stage. The most common sites of metastasis include liver, local lymph nodes, lungs, peritoneum, and bone. There are only rare case reports of ACC with cutaneous metastasis (1). We report the case of a six year-old boy with history of adrenal cortical carcinoma who developed cutaneous metastasis and confirm the usefulness of a previously described immunohistochemical panel to help differentiate it histopathologically from other tumors with similar cytomorphology.

Case Report

A six year-old boy with history of precocious puberty and stage IV ACC status post resection, with lung, brain, and heart metastasis, was admitted to the hospital for his fifth cycle of chemotherapy with etoposide, doxorubicin, and mitotane. The dermatology service was consulted for an asymptomatic lesion over the left lower border of the scapula that had been present for two weeks. On examination, there was an isolated 1.0 cm diameter, firm, subcutaneous nodule with hyperpigmentation (Figure 1).

Histopathological examination revealed a neoplasm located in the deep dermis composed of nodules of large cells with a compact eosinophilic cytoplasm (Figure 2). The differential diagnosis at this point included a metastatic lesion from ACC versus renal cell carcinoma vs melanoma. Immunohistochemistry revealed weakly positive neuron-specific enolase (NSE), focally positive alpha inhibin and synaptophysin, yet negative chromogranin. The clinical, histological, and immunohistochemical findings were consistent with metastatic adrenal cortical carcinoma.

Discussion

Given the rarity of adrenal cortical carcinoma, cutaneous metastasis are uncommon compared to other neoplasms that spread to the skin. Therefore, it is unusual to entertain it in the differential diagnosis of cutaneous metastatic tumors. Given the lack of specific immunohistochemical stains, a panel with markers used in tumors with similar cytomorphological features (adrenal cortical adenoma, pheochromocytoma, metastatic renal cell carcinoma, and metastatic melanoma) is often helpful in differentiating ACC (Table 1).

Alpha inhibin, a glycoprotein expressed by sex cord stromal tumors, is sensitive for ACC. Yet, it is not very specific as it also stains sex cord stromal tumors and pituitary adenomas (1-2). A103, a monoclonal antibody against epitopes on recombinant Melan-A, constitutes a more specific stain. Melan-A is an antigen recognized by cytotoxic T-cells initially thought to be restricted to melanocytic tumors, but later on recognized to be present on steroid hormone-producing neoplasms including adrenocortical tumors (2). It is positive in both ACC and melanoma, yet the former is S-100 and HMB-45 negative (3).

D11, a molecule that labels the nuclei of adrenal cortical cells, can be utilized to identify ACC, yet it lacks specificity

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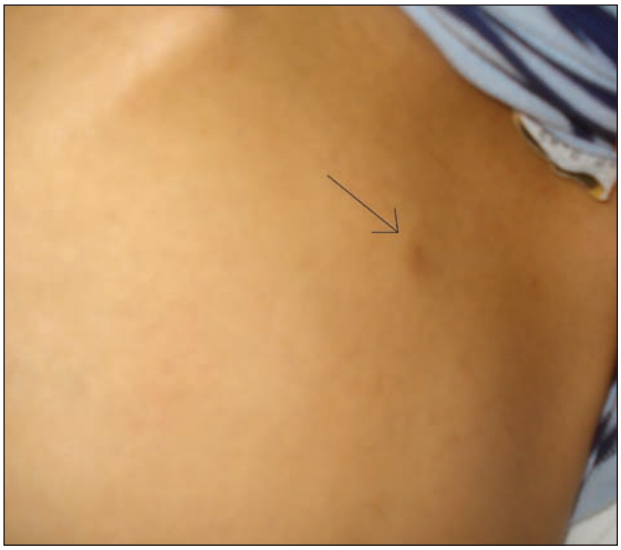

Figure 1. Subcutaneous nodule with hyperpigmentation

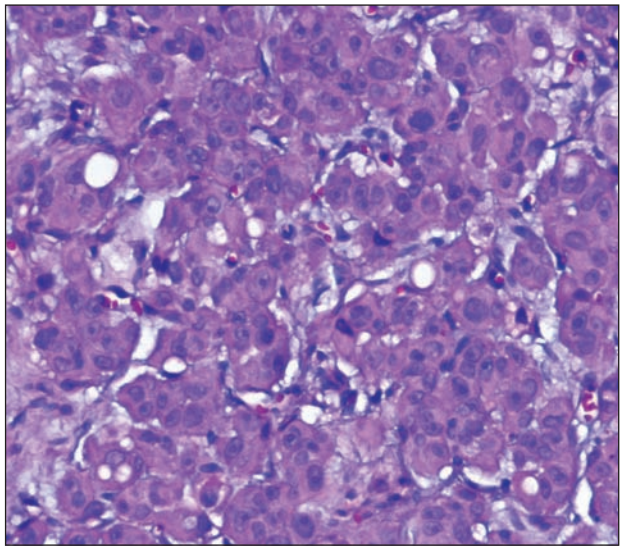

Figure 2. Histopathological examination

Table 1. Immunohistochemical Panel to Distinguish ACC from other Tumors with Similar Cytomorphology (1)

	ACC	Melanoma	Pheochromocytoma	Renal Cell Carcinoma	Hepatocellular Carcinoma
Melan-A	++	++	-	-	-
S-100	-	++	-	+	-
HMB-45	-	+	-	Rare	-
α- Inhibin	++	Rare	-	-	Rare
D11	++	-	-	+	++
Calretinin	++	Rare	-	-	-
Synaptophysin	++	Rare	++	-	-
Chromogranin	-	-	++	-	-

as it also stains hepatocellular, lung, and renal cell carcinomas (3). ACC and pheochromocytomas share cytomorphological features (they can have similar nested growth patterns) and show neuroendocrine differentiation. These neoplasms are both synaptophysin positive, yet only pheochromocyoma is positive for chromogranin (2). Calretinin, a calcium-binding protein (known as a mesothelioma marker) has been shown to be expressed in various adrenocortical neoplasms in several studies (4-5). NSE is an acidic enzyme found in neuroendocrine cells. It has a low specificity as it can be found in a variety of tumors such as malignant melanoma and merkel cell carcinoma.

Conclusion

We report the case of a six-year old boy with history of adrenal cortical carcinoma with cutaneous metastasis. Without a clinical history the diagnosis of these tumors can be very challenging, yet an immunohistochemistry panel consisting of melan-A, alpha inhibin, D11, calretinin, NSE, synaptophysin and chromogranin can be helpful in establishing the diagnosis.

Resumen

Reportamos el caso de un niño de seis años de edad con historial de carcinoma adrenocortical que presenta con una metástasis cutánea. Debido a la incidencia baja de metástasis cutáneas que surgen del carcinoma adrenocortical, establecer su diagnóstico puede ser un reto basado solo en el examen histológico. El historial clínico en combinación con un panel de inmunohistoquímica consistiendo de melan-A, inhibina alfa, D11, calretinina, enolasa neural específica, sinatofisina y cromogranina, pueden ser útiles para diferenciarlo de otros tumores con citomorfología semejante.

References

1. Satter EK, Barnette DJ. Adrenocortical carcinoma with delayed cutaneous metastasis. J Cutan Pathol 2008; 35: 677-680.
2. Lau SK, Weiss LW. Adrenocortical neoplasm's. Pathology Case Reviews 2005; 10:219.
3. Loy TS, Phillips RW, Linder CL. A103 immunostainin in the diagnosis of adrenal cortical tumors. An immunohistochemical study of 315 cases. Arch Path Lab Med 2002; 126: 170.
4. Zhang PJ, Genega EM, Tomaszewski JE, Pasha TL, et al. The role of calretinin, inhibin, melan-A, BCL-2, and C-kit in differentiating adrenal cortical and medullary tumors: An immunohistochemical study. Mod Pathol 2003; 16: 591-597.
5. Jorda M, De MB, Nadji M. Calretinin and inhibin are useful in separating adrenocortical neoplasms from pheochromocytomas. Appl Immunohistochem Mol Morphol 2002; 10: 67-70.