

Histidine decarboxylase, DOPA decarboxylase, and vesicular monoamine transporter 2 expression in neuroendocrine tumors: immunohistochemical study and gene expression analysis.

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Source

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Abstract

Histidine decarboxylase (HDC) and vesicular monoamine transporter 2 (v-MAT2) are involved in the biosynthesis and storage of histamine. DOPA decarboxylase (DDC) is involved in the biosynthesis of a variety of amines and shares a high degree of homology with HDC. HDC and v-MAT2 immunoreactivities (IR) have recently been detected in well-differentiated neuroendocrine tumors (WDNETs) and poorly differentiated neuroendocrine carcinomas (PDNECs) of various sites and have been proposed as general endocrine markers. We evaluated HDC and v-MAT2 IR in a series of 117 WDNETs and PDNECs from different sites. Western blotting analysis was performed to verify the specificity of anti-DDC and anti-HDC antibodies. Real-time RT-PCR was performed using specific probes for HDC and DDC on 42 cases, examined also for DDC IR. HDC and v-MAT2 IR were observed in the majority of WDNETs and PDNECs of all sites and HDC-IR cases were always also DDC-IR. In contrast, high levels of HDC mRNA were detected only in the gastroenteropancreatic WDNETs, which did not show increased DDC mRNA levels. On the other hand, bronchial carcinoids and lung PDNECs showed high DDC mRNA levels, but nearly undetectable HDC mRNA levels. Western blotting analysis showed a cross-reaction between anti-HDC and anti-DDC antibodies. HDC should not be considered as a general endocrine marker and HDC IR in bronchial carcinoids and PDNECs of the lung can probably be attributed to a cross-reaction with DDC.

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