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Invited Commentary

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Traditionally, thyroid carcinoma has been subdivided into differentiated (papillary; mixed papillary/follicular, follicular, Hurthle cell, clear cell, and medullary) and undifferentiated (anaplastic) types. It is generally believed that differentiated thyroid carcinoma can be divided into 2 histogenetically distinct categories, follicular and papillary carcinoma, which are derived from follicular cells and are associated with the production of thyroglobulin and thyroid hormones; and medullary carcinoma, which is derived from the parafollicular cells (C cells) and is associated with the production of calcitonin and other peptide hormones. The number of case reports of mixed thyroid carcinomas of medullary, papillary, follicular, and undifferentiated patterns in both the primary and metastatic lesions has been increasing in the literature [1–5].

Ljungberg and co-workers from Sweden have demonstrated by histologic, histochemical, and radioimmunologic techniques that both follicular and parafollicular cells can exist in a mixed neoplasm [2]. They also showed uptake of ^{131}I by pulmonary metastases in their reported case. Hellman and co-workers reported in 1979 the successful treatment with ^{131}I of a 16-year-old girl with residual medullary carcinoma following a near-total thyroidectomy [6]. They demonstrated a clear decrease in thyrocalcitonin levels to normal levels after ^{131}I therapy. These authors believe that normal thyroid tissue trapped the ^{131}I and delivered approximately 34,000 rad to the tumor bed destroying not only the remaining normal follicular cells but also the parafollicular cells (medullary cancer).

The 2 cases of ^{131}I uptake in medullary cancers reported in this article probably represent the mixed pattern of follicular and parafollicular tumors previously described. The authors, however, have not provided any evidence of the histologic appearance of the metastases in their 2 cases (P.J. and R.M.) with ^{131}I uptake. In the 2 cases (M.L., Fig. 2 and H.J., Fig. 3) in which excised lymph nodes demonstrated only metastatic medullary carcinoma, there was no ^{131}I uptake. Their first case (G.S.) of mixed "anaplastic" and medullary carcinoma appears to be another example of a mixed tumor. Parker and colleagues demonstrated, by histological studies and immunoperoxidase staining for calcitonin and thyroglobulin, the presence of both follicular and medullary areas in tumor metastatic to lymph nodes from a patient whose primary thyroid neoplasm was medullary carcinoma [1].

In order to state that medullary carcinoma concentrates ^{131}I, areas of follicular cells must first be absolutely excluded since they are the areas of probable uptake of ^{131}I. Riccabona and colleagues have failed to satisfy this important criterion.

There will be an increasingly small number of patients with residual or metastatic medullary carcinoma who will benefit from therapeutic ^{131}I. To determine which patients can be treated with ^{131}I will require more routine postoperative scanning with ^{131}I in all cases of medullary carcinoma, as well as careful examination of all excised tissue for the mixed follicular and parafollicular tumor pattern. Immunolocalization techniques using calcitonin and thyroglobulin are essential for accurate diagnosis of these thyroid carcinomas.

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