A lymphoma may affect the whole gland, but is often found only on one side. The regional lymph nodes are often affected as well. In about 70% of cases lymphoma arises from a preexisting chronic lymphocytic thyroiditis (Hashimoto’s thyroiditis) [6,7,20]. The tumor is strongly hypoechoic, often well marginated, but usually causes enlargement of the affected lobe. The echo pattern varies from micronodular to homogeneous. Thyroid lymphomas are usually poorly vascularized, but may also show blood vessels with chaotic distribution [6]. The micronodular lymphomas may resemble Hashimoto’s thyroiditis, and may also be surrounded by thyroiditis.

**Common Features of Lymphoma**

- Hypoechoic
- Homogeneous or nodular echo pattern
- Well marginated
- Regional lymph node affection

**Cytologic Morphology of Lymphoma**

The cytopathologist should always consider the possible presence and amount of lymphoid cells, even when the clinical or radiologic findings show no indication of thyroiditis or lymphoma. In specimens rich in blood, one may find some scattered leukocytes, but distinguishing a smear with lymphoid cells due to other reasons is seldom challenging. The finding of lymphoid cells together with oncocytic cells is usually consistent with Hashimoto’s thyroiditis. The variation in the size of the nuclei in the oncocytes may be extensive (anisocytosis). In smears with an abundant amount of lymphocytes, but depleted of oncocytes, the possibility of a lymphoid neoplasm must be investigated. An extra cytologic biopsy for flow cytometric immunophenotyping preferably should be taken. This is especially important in elderly patients (over 60 years of age), because lymphoid lesions in these patients are often found to be lymphoma.

**Features of Plasmacytoma**

In the thyroid gland, plasma cell neoplasms usually appear in the form of extraosseous plasmacytoma, which is extremely rare [21]. In our ultrasound practice we have only one case. At ultrasound the actual tumor appears less hypoechoic and with larger nodules compared with what is usually found in a lymphoma. Nobody knows if these features could be significant.

**Histologic and Cytologic Morphology of Plasmacytoma**

The neoplasm consists of a tumorous mass of usually mature, or more seldom, immature plasma cells. Mature plasma cells demonstrate the characteristic features with eccentric nuclei and abundant basophilic cytoplasm. Immature plasma cells demonstrate a high nuclear–cytoplasmic ratio and prominent nucleoli. Flow cytometric immunophenotyping demonstrating a population of lymphoid cells monoclonal for intracytoplasmic light chain immunoglobulin is of crucial importance when making the diagnosis of plasmacytoma.
75-Year-old man
- **Clinical history**: Enlarged, hard thyroid, highly suspicious for malignancy at CT.
- **Ultrasound**: Lymphoma. Also thyroiditis in right lobe?
- **Cytology left lobe**: Non-Hodgkin B-cell lymphoma.
- **18-Gauge histologic needle biopsy left lobe**: Diffuse large cell B-cell lymphoma.

**Features**
- Lobulated nodular, affecting both lobes
- Hypoechoic
- Inhomogeneous echo pattern
- Coarse septations
- Scant vascularity

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**Figure 10-1.** Ultrasound of lymphoma in both lobes. **A**, Transverse. **B**, Longitudinal, sagittal diameter: 75 mm. **C**, Color Doppler, transverse.