CLINICAL IMAGE

Liver metastasis as the first manifestation of differentiated thyroid cancer

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A 70-year-old woman presented with symptoms of hyperthyroidism and a solitary tumor of the liver. Due to complications of a cholecystectomy, abdominal computed tomography (CT) was performed. It showed a polycystic lesion (15×12×10 cm in size) in the right liver lobe (FIGURE 1A). A core needle biopsy of the tumor showed a differentiated (follicular) thyroid carcinoma (DTC) metastasis, with an immunohistochemical analysis: CK7(+), CK20(–), and thyroglobulin(+) (FIGURE 1B). Laboratory tests confirmed primary hyperthyroidism. Additionally, serum thyroglobulin levels were significantly elevated (60 753 ng/ml; reference range <55 ng/ml). An ultrasound showed enlarged thyroid volume (27.8 ml) with multiple nodules and left jugular vein thrombosis.

The patient underwent multistage interdisciplinary treatment. Methimazole therapy was followed by thyroidectomy. Histopathologic examination confirmed DTC (minimally invasive follicular carcinoma; T2, N0, M1 according to the TNM classification). Suppressive L-thyroxin treatment was started. Postoperative serum thyroglobulin levels were still elevated (169 037 ng/ml). Radioactive iodine (RAI) treatment with a cumulative dose of 500 mCi with adjuvant recombinant human thyrotropin (rhTSH) was administered. A posttherapeutic whole-body scan showed iodine uptake only in the right liver lobe (FIGURE 1C). The size of liver metastasis was stable on CT, and liver enzyme levels remained within the reference ranges.

After 2 years, the patient complained of a sudden loss of vision in the left eye and eyelid prolapse accompanied by facial neuropathy. Head magnetic resonance imaging revealed a left orbital tumor measuring 11 × 6 mm, with a moderate and homogenous contrast medium uptake. It was localized in the posterior part of the left orbit, compressing the optic nerve (FIGURE 1D). Fine-needle aspiration biopsy was scheduled but the patient's general condition rapidly deteriorated. Severe liver dysfunction due to multiple liver metastases was diagnosed (aspartate aminotransferase, 168 U/l; alanine aminotransferase, 303 U/l; alkaline phosphatase, 619 U/l; γ-glutamyltransferase, 1178 U/l; and bilirubin, 9.37 mg/dl). The patient died of hepatic coma 4 weeks later.

Liver metastases in DTC are very rare, even at the end stage of the disease. Only a few cases of a solitary liver metastasis of DTC have been

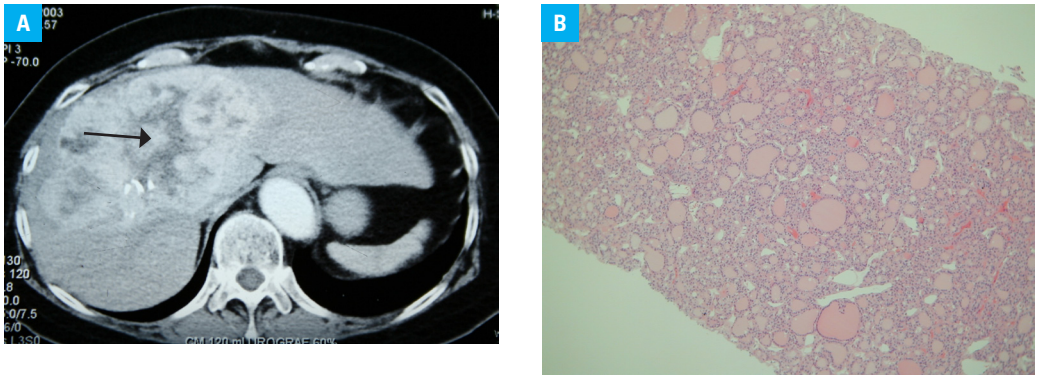

FIGURE 1 Metastasis of differentiated thyroid carcinoma to the liver and orbit: **A** – abdominal computed tomography scan showing a large polycystic tumor (15×12×10 cm in size) in the right liver lobe before the diagnosis (arrow); **B** – histopathologic examination of liver tumor tissue; core needle biopsy (×100).

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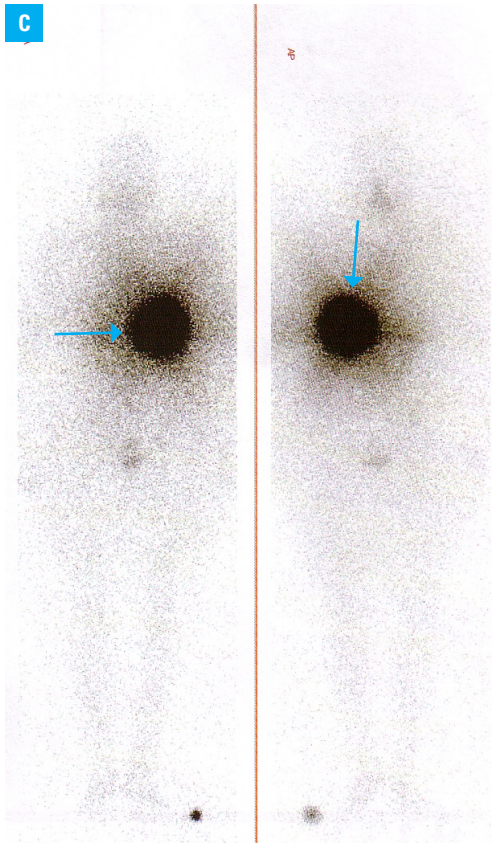

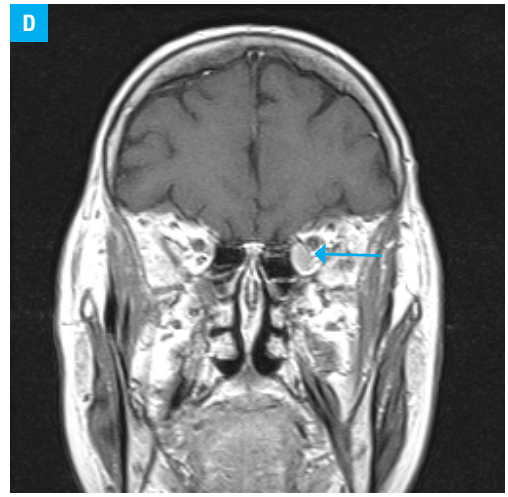

FIGURE 1 Metastasis of differentiated thyroid carcinoma to the liver and orbit: **C** – posttherapeutic radioactive iodine (RAI) whole-body scan: intense RAI uptake only in the right liver lobe (arrows); **D** – magnetic resonance imaging of the orbit: the tumor measuring 11×6 mm localized in the posterior part of the orbit anteriorly to the optic nerve (arrow); a homogenous contrast uptake is visible. The tumor gives compression to the optic nerve.

reported.[1-3] A combination of serum thyroglobulin assessment and imaging tests, such as iodine scintigraphy, enables proper diagnosis and treatment.[1-3] In a group of 444 patients with DTC metastases, RAI ablation with adjuvant rhTSH followed by total thyroidectomy was the most effective treatment, with the survival rate of 56% at 10 years, 45% at 15 years, and 40% at 20 years.[4]

In our patient, the hormonally active DTC metastasis was diagnosed on the basis of a simultaneous increase in serum thyroglobulin levels and RAI uptake in the liver tumor. RAI therapy with adjuvant rhTSH was an optimal treatment that improved the quality of life in our patient for the subsequent 2 years. Orbital metastases of DTC are untypical and such clinical suspicion should be confirmed with a histopathologic examination.[5] In our case, tumor biopsy could not be performed due to rapid disease progression. Our case shows that patients with liver metastases of DTC might require aggressive treatment due to potential sudden disease progression.

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