Thyroid teratoma in an 11-month-old infant

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Abstract We report a case of congenital benign thyroid teratoma in an 11-month-old male infant who was found to have right thyroid gland mass since birth. The tumor was 25 × 20 × 15 mm with whole thin capsule and could be easily dissected from the surrounding normal thyroid tissue at surgery. Histologically, tumor had mature derivatives of the three primordial germ layers with a variety of benign and well-differentiated elements. It was the most conspicuous feature that the tumor was composed mainly of the neurological tissue resembling brain tissue with glial cells and ependymal epithelium components. There were a few anastomosing variably sized tubules and cysts lined by ependymal epithelial cells with papillary feature and retinal pigment epithelial cells. In summary, benign teratoma of thyroid gland in an 11-month-old infant was morphologically and immunophenotypically identified.

Benign thyroid teratomas originating the normal thyroid glands in infant are rare. We report a case of congenital benign thyroid teratoma in an 11-month-old infant.

Case presentation

An 11-month-old male infant was found to have a right thyroid gland mass since birth. On admission, physical examination, laboratory and imaging studies were performed. A cervical ultrasonography demonstrated a rather well limited mass in the right thyroid gland. However, all other laboratory findings were unremarkable. After endocrine activity had been ruled out, a benign thyroid gland tumor was suspected. At surgery this mass was well circumscribed and could be easily dissected from the surrounding normal thyroid tissue.

Histopathology

Grossly, the solid tumor was 25 × 20 × 15 mm with whole thin capsule. Upon sectioning, it was grayish-white and firm without hemorrhage. There was little thyroid tissue flanking the mass.
Histological examination with H&E staining demonstrated that the tumor had derivatives of all three primordial germ layers with a variety of benign and well-differentiated components including prominent neurological tissue distributed irregularly in the mesenchymal tissue (Fig. 1A–C). It was the most conspicuous feature that the tumor was composed mainly of the neurological tissue resembling brain tissue with glial cells and ependymal epithelial components (Fig. 1A,B). There were a few anastomosing variably sized tubules and cysts lined by ependymal epithelial cells with papillary feature and retinal pigment epithelial cells (Fig. 1B,C). The tumor had also scattered tiny cystic spaces and tubules lined by thyroid follicular epithelial cells, glandular epithelial cells of the gastrointestinal type and ciliated respiratory epithelial cells focally. In addition, other components included fibrous tissue, adipose tissue, muscle tissues, small islets of cartilage and bone were distributed focally throughout the tumor. By immunohistochemical staining, neurological tissue resembling brain tissue with glial cells component and ependymal epithelium with papillary feature were strongly positive for glial fibrillary acidic protein (GFAP) (red arrow in Fig. 1A), S-100 (Fig. 1D), neuron-specific enolase (NSE) and synaptophysin (SYN). There were also strongly positive for cytokeratin (CK) and epithelial membrane antigen (EMA) in the glandular epithelium and ciliated respiratory epithelium. Thyroid follicular epithelium was also positive staining for anti-thyroglobulin antibody (TG). The benign thyroid teratoma was morphologically and immunophenotypically identified.

Discussion

Teratomas usually present as benign cystic, semicystic or solid tumors with benign histological characteristics. Head and neck teratomas in children are mostly benign lesions amenable to curative excision. These tumors locate in thyroid on the basis of the presence of a normal thyroid gland. Benign thyroid teratomas originating the normal thyroid glands in infant are rare. However, malignant degeneration could be observed more frequently in teratomas of the neck occurring in teenagers and adults. The case in our report provided more information about the clinicopathological characteristics of the benign thyroid teratoma in an 11-month-old infant.

Figure 1  Histological features of the tumor were showed in (A–D). It was the most conspicuous feature that the tumor was composed mainly of the neurological tissue resembling brain tissue with glial cells and ependymal epithelium components (A, B) (H&E staining, ×100). There were a few anastomosing variably sized tubules and cysts lined by ependymal epithelial cells with papillary feature and retinal pigment epithelial cells (B, C) (H&E staining, ×100). Glial fibrillary acidic protein was strongly positive expression in neurological tissue resembling brain tissue with glial cells component (red arrow in A) and S-100 protein strongly positive expressed in neurological tissue resembling brain tissue with glial cells and anastomosing variably sized tubules and cysts lined by ependymal epithelium components (D, immunohistochemistry, AEC staining, ×100).
A cervical ultrasonography demonstrated a rather well limited mass in the thyroid gland. Histologically, the thyroid tumor was composed of multiple mature tissues derived from all three germ cell layers foreign to the part of which arised. The most conspicuous feature of the tumor was mainly composed of the neurological tissue resembling brain tissue, which was distributed randomly in the mesenchymal tissue. Among the neurological tissue, there were a few anastomosing variably sized tubules and tiny cysts lined by ependymal epithelial cells with papillary feature and retinal pigment epithelial cells. Also, the tumor had epithelial components such as thyroid follicular epithelium, gastrointestinal type glandular epithelium and ciliated respiratory epithelium focally, besides other components including fibrous tissue, adipose tissue, muscle tissues, small islets of cartilage and bone. Moreover, multiple tissues derived from all three germ cell layers were further identified by immunohistochemical staining.

In summary, benign teratoma of thyroid gland in an 11-month-old infant was morphologically and immunophenotypically identified.

References