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Papillary thyroid cancer in a child with hemophilia A

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The authors stated that the written consent was obtained from the parents of the patient presented with images in the study.

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Abstract

Hemophilia A is a hereditary hemorrhagic disorder associated with bleeding episodes and characterized by deficiency or dysfunction of coagulation protein factor VIII. Cancer incidence was found to increase in hemophilic patients. A case of a 6-year old boy with papillary thyroid cancer and hemophilia who underwent a successful total thyroidectomy and bilateral modified radical lymph node dissection with appropriate peri-operative management consisting of Factor VIII replacement is presented.

Keywords: Hemophilia A, Child, Papillary thyroid cancer

Introduction

Hemophilia A is a genetic hemorrhagic illness marked by a lack of or dysfunction of coagulation protein factor VIII, which is linked to bleeding episodes. Hemophiliacs may develop a variety of medical and surgical issues (such as cardiovascular diseases, malignancies, and renal disease) as they age, and the consequences of aging become more apparent. Cancer incidence was found to increase in hemophilic patients. A literature search for malignancies in patients with hemophilia revealed that hepatocellular carcinoma, lymphoma, urogenital cancers, leukemia, gastrointestinal cancers, and respiratory tract cancers are the most common malignancies [1–3]. A case of a 6- year old boy with papillary thyroid cancer and hemophilia who underwent a successful total thyroidectomy and bilateral modified radical lymph node dissection with appropriate peri-operative management consisting of Factor VIII replacement is presented.

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Case presentation

In March 2016, a 6-year-old hemophilia patient undergoing prophylaxis treatment and with a history of past intracranial bleeding presented to the Pediatric Hematology Clinic with neck swelling. Neck ultrasound imaging showed an enlargement of the thyroid gland, diffuse punctate calcifications, heterogeneous nodules, and right cervical lymphadenopathy. Thyroglobulin levels were significantly higher (410 ng/ml), and lymph node excisional biopsy was performed on the patient. Papillary thyroid cancer and lymph node metastasis were identified based on the biopsy. He underwent a successful total thyroidectomy and bilateral modified radical lymph node dissection with appropriate peri-operative management consisting of Factor VIII replacement (Figure 1). Pathological examination of the tumor showed that the type and subtype of thyroid cancer was classic type papillary thyroid cancer, multisegmental and multifocal. The tumor was found to have spread beyond the thyroid via thyroid capsule invasion, lymphatic invasion, and blood vessel invasion (Figure 2). After surgery, the patient was admitted to the nuclear medicine department for iodine treatment. Oral radioactive iodine treatment for thyroid ablation was then administered. Levothyroxine sodium treatment was started after radioactive treatment, and it was decided to discharge the patient from the service. The patient is still seen on an outpatient basis to undergo routine thyroid monitoring, including thyroid function tests, anti-thyroglobulin antibody test, whole body iodine screening, and other hematological blood tests in addition to arranging his treatment. Informed consent was obtained from the patient's family for scientific presentation of the case.

Figure 1: Six-year-old haemophilia patient. Total thyroidectomy and bilateral modified radical lymph node dissection

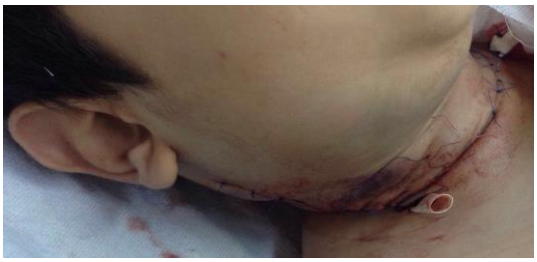
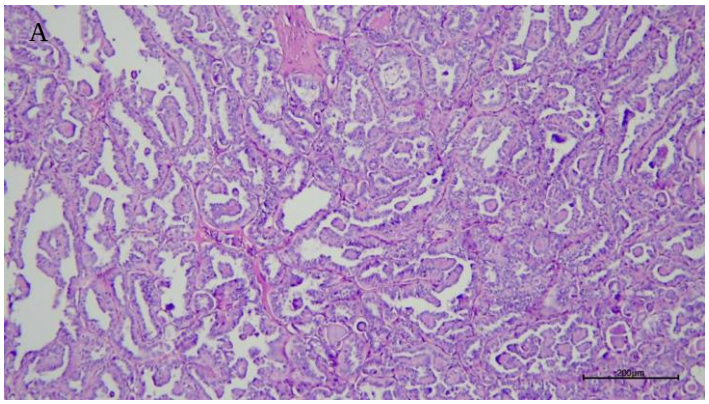
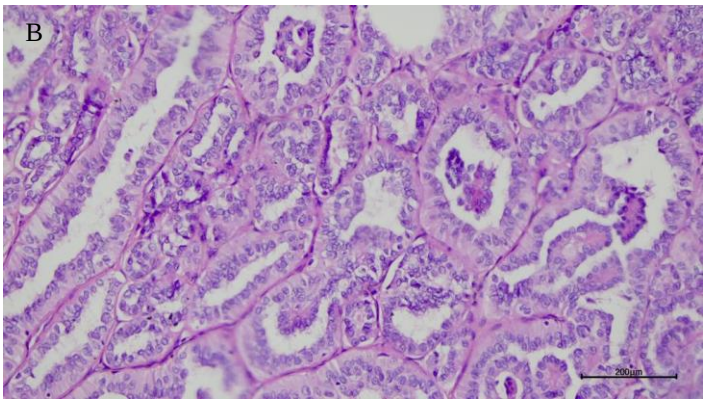


Figure 2: Classic type papiller thyroid cancer, multisegmental and multifocal. Tumor spread beyond the thyroid via thyroid capsule invasion, lymphatic invasion, and blood vessel invasion. A: x100, B: x200





Discussion

Life expectancies of patients with hemophilia have dramatically improved over the last years, and it is expected that malignancies whose prevalence tends to increase with age will also increase in this population. Different malignancies in these patients have been reported over the past several years, but to our knowledge, our patient is the first pediatric case with papillary thyroid cancer and hemophilia.

Well-differentiated thyroid cancer (papillary or follicular) remains the most common endocrine cancer in the pediatric population. Thyroid cancer in children is associated with radiation exposure (associated with treatment or imaging of head and neck) [4]. It is believed that multiple imaging examinations to evaluate his cerebral hemorrhage was the most likely factor that caused his cancer development. In addition, cancer is more common in hemophilic patients and can be attributed to recurrent bleeds and inflammation (which stimulate the immune system), radiation exposure from multiple diagnostic imaging procedures, and chronic inflammation and immune dysregulation from multiple blood transfusions [5–7]. Hemophilia patients have been found to develop acquired chromosomal abnormalities. Recombinant products containing albumin have also been found to suppress lymphocyte transformation [8]. Another reason for the under-representation of cancers in hemophilia patients could be the refusal to undergo biopsies due to the risk of bleeding. After drainage of the subdural hematoma, our patient was followed for six years and received prophylactic factor VIII replacement treatment and antiepileptic drugs. Papillary thyroid cancer in children tends to be multifocal and multisegmental. Thus, total or near-total thyroidectomy is the recommended initial surgical procedure. Despite appropriate treatment, post-operative surgical site bleeding was observed, but inhibitory factors were negative. The patient was included in the high-risk thyroid cancer group, and after bleeding stopped, radioactive iodine and thyroid replacement therapy were planned. For recurrence control, ultrasound examinations and serum thyroglobulin monitoring are ongoing.

Conclusions

Finally, improved hemophilia care has extended the life expectancy of these patients, and cancer should be considered in patients with hemophilia. Hemophilia should not be used to rule out the possibility of a cancer diagnosis, and it should not be used to delay a diagnosis. These individuals should have access to appropriate treatment regimens and surgical procedures. Cancer incidence was found to increase in hemophilic patients,

and it should be kept in mind that hemophiliac patients may experience malignancies at any point in their life.

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