

Case Report

ECTOPIC LOCATION OF THYROID TISSUE IN THE AREA OF THE TEMPOROMANDIBULAR JOINT. CLINICAL CASE REPORT.

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Abstract. Background: The atypical location of organs and tissues in the human body is an important topic and a serious medical problem. Ectopic thyroid tissue is a rare and not fully explored condition. Asymptomatic forms of ectopic thyroid tissue usually do not require special treatment. However, symptomatic patients require special attention. For any localizations, such ectopy may be the only thyroid tissue in the body or exist simultaneously with the normal thyroid gland and have an increased tendency to cancerous transformation. The presence of two or more foci of ectopic thyroid tissue is an even rarer anomaly.

Case Description: The article presents an overview of ectopically located thyroid goiter in the temporomandibular joint area and describes specific diagnostic and treatment approaches.

Conclusion: Ectopy of thyroid tissue into the lower jaw and associated joints is rare. Medical problems associated with this usually pose significant difficulties in diagnosis. The possibility of ectopy of hormone-active tissue in atypical locations should always be considered to avoid a pathological problem.

Keywords: Hypertension, Cognitive disorders, Neuropsychological tests, Quality of life, Gender characteristics, Autonomic (vegetative) index, Blood pressure

INTRODUCTION. The pathology of the endocrine system occupies all around the World with the lead case of thyroid gland problems. The incidents of thyroid diseases in Ukraine have increased from 689 thousand to 1 million 846 thousand over the past ten years and from 941 to 4210.4 cases per 100 thousand population by prevalence. Thyroid pathology accounted for 46% of the total endocrine morbidity as of January 1, 2020. The development of thyroid diseases is largely due to environmental factors. After the Chernobyl nuclear power plant accident, thyroid diseases have become a particularly substantial problem for Ukraine.

The atypical location of any organs and tissues in the human body is a challenging topic for observation and a serious medical problem that involves a multidisciplinary team. As a rule, the history of such patients is quite typical - long-term follow-up with different specialists by the time dystopia is detected. The cases are particularly difficult

when the ectopic location is combined with hormonal imbalance.

We present a clinical case of thyroid tissue ectopy in the area of the temporomandibular joint.

CASE PRESENTATION. A 74-year-old Caucasian female presented to "Dnipropetrovs'k Regional Clinical Hospital, named after I. I. Mechnikov" in May 2020, complaining of "tissue formation" and swelling in the area of the left temporomandibular joint, which lasted for approximately a year and worsened over time. A thyroid ultrasound was initially done in May 2019 and revealed some increased gland size with numerous focal lesions up to 12x18 mm. A thyroid fine needle biopsy in May 2019 was suspicious for malignancy in the right thyroid lobe. In the left thyroid lobe, abnormal cells were not found. Thyroid hormones were within normal limits.

The patient was diagnosed with multinodular goiter (MNG) II degree and euthyroidism. Extra-fascial thyroidectomy was performed in May 2019 without

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complications. *Histopathology* revealed a nodule in the right lobe of the thyroid with the structure of a proliferating A-cell adenoma and foci of fibrosis and calcification. The left lobe nodules had the structure of the macro-microfollicular goiter with foci of fibrosis and calcification. Medium fibrosis and focal lymphoid infiltrates were observed in extra-nodal tissue.

Physical exam: At the time of presentation (May 2020), the patient had a painless, soft, elastic consistency lesion, not movable, not attached to the skin in the area of the left temporomandibular joint. The joint area had a normal color. A joint did not move fully, with limited mouth opening and moderate pain.

Laboratory data: At the time of presentation (May 2020), thyroglobulin was 1237 ng/ml; it increased to 1868 ng/ml in July 2020, and even more in 2 months: thyroglobulin — 3460 ng/ml.

Imaging study: A multi-slice CT scan (MSCT) with contrast was done in June 2020 and revealed a neoplasm of the left condyloid process mandibular joint. Magnetic resonance imaging (MRI) with contrast was done in June 2020 and revealed the volumetric lesion of the left condyloid process of the mandibular joint, with the maxillary artery passing through. Gamma scintigraphy with NaI^{131} showed the area of the indicator accumulation with high intensity and considerable size in the anatomical projection of the left temporomandibular joint.

Pathology report: The incisional biopsy of the lesion revealed immunohistochemically the thyroid tissue. Based on the above data, the ectopically located lobe of the thyroid gland in the area of the left temporomandibular joint was diagnosed. Due to the high risk of disability during surgery (facial nerve paralysis, damage to the maxillary artery), it was decided to perform radioiodine ablation of the ectopically located thyroid tissue after the patient's consent was obtained.

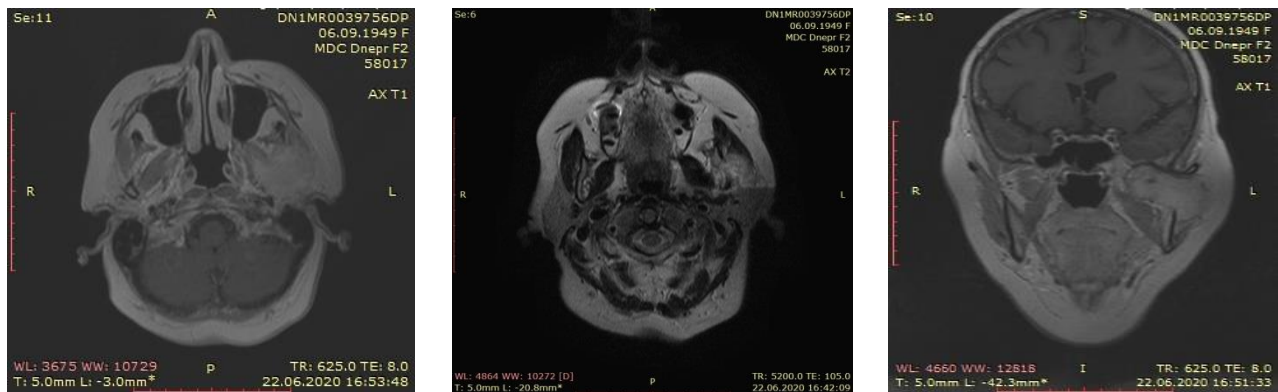


Figure 1. Magnetic resonance imaging (MRI) with contrast agent in May 2020.

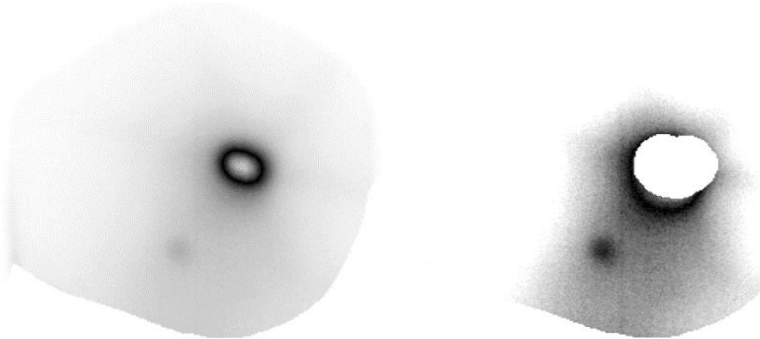


Figure 2. Gamma scintigraphy with NaI^{131} in July 2020.

The patient was treated with two courses of radioiodine therapy with 6 GBq of NaI¹³¹ in September 2020 and February 2021. Gamma scintigraphy with NaI¹³¹ was done in May 2021: foci of accumulation of the indicator were not found in the projection of the thyroid and the whole body; thyroglobulin decreased to 1.8 ng/ml.

asphyxia after 16 hours after birth [4]. Over 100 years, only about 500 cases of thyroid ectopy have been published in the English-language literature. Women accounted for 65–80 % of people with the described deviation.

The fetal thyroid gland develops by the 24th day of

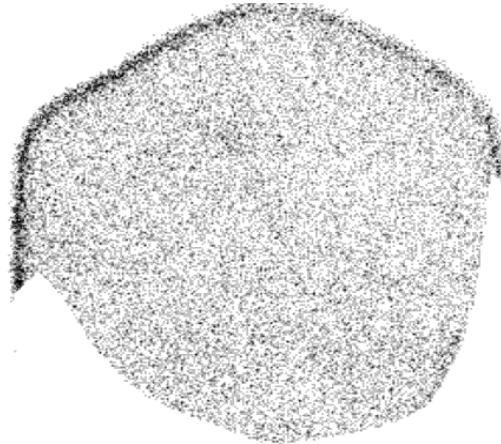


Figure 3. Gamma scintigraphy with NaI¹³¹ in May 2021.

DISCUSSION. Ectopic thyroid tissue is rare and not a fully explored medical condition. Diverse locations of ectopic thyroid tissue are rarely seen in routine clinical practice. Ectopic thyroid locations are associated with a defect in thyroid embryogenesis in the early stages of fetal development. In such cases, the symptoms depend on the location and size of the ectopic thyroid, its function, and its morphological structure [1]. Among the developmental disorders of the thyroid, the most common anomalies or dysgenes are agenesis (absence) and hypoplasia (under development). Among thyroid dysgenesis, the most common is thyroid ectopia (48-61% of all cases). Ectopia is the displacement of an organ into neighboring structures due to developmental defects or traumatic impact [2]. About defects of the classic allocation of the thyroid, the next terms are used in the specialized profile literature: 1) aberrant thyroid — deviation from normal structure, location, or condition; 2) dystopia of the thyroid (dys+topos) — the location of an organ or tissue in an unusual place for them; 3) allotopy of the thyroid gland (allos + topos) — abnormal location of an organ, tissue or structure; 4) malposition — wrong location. The prevalence of thyroid ectopy in the population is 1 case per 100-300 thousand population or 1 case per 4-8 thousand patients with thyroid pathology [3]. In 1869, W. Hickman was the first to report an ectopic thyroid case at the root of the tongue, in which the epiglottis and larynx were displaced down. It caused the death of the child from

pregnancy through the proliferation of epithelial cells that emerge from the endoderm of the primary gut in the pharyngeal region. Displacement of the thyroid gland is associated with a disturbance of the embryological process of formation and migration (incomplete act) along the thyroglossal pathway: tongue root (foramen caecum) — os hyoideum - larynx - trachea. Normally, the lowering of the thyroid gland below the body of the hyoid bone with the final position from 2 to 5 of the rings of the anterior surface of the trachea is completed by the seventh week of gestation. As shown in the model of experimental animals, impaired thyroid development may be associated with the aberration of molecular mechanisms of gene expression regulation: gene translocation paired-box gene 8, somatic mutations thyroid transcription factor 1 and thyroid transcription factor 2. The precise mechanism of such a phenomenon in humans was not revealed yet. The mechanisms of thyroid migration of thyroid tissue into the abdominal cavity or pelvis are even more unclear. Rare localization of ectopic thyroid tissue occurs in the adrenal glands, pituitary gland, female reproductive organs, breast, salivary gland, and even eyes [5,6,7,8]. Only a few reports in the past 25 years have addressed thyroid ectopy in the mandible or associated joints [9, 10, 11].

CONCLUSION. Ectopy of thyroid tissue into the lower jaw and associated joints is a rare phenomenon and poses significant diagnostic difficulties. One should always

remember the possibility of ectopy of hormone-active tissue in typical and atypical locations to avoid medical complications.

Conflicts of interest: Authors declare no conflict of interest.

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