A 52-year-old woman with subacute thyroiditis following seasonal influenza vaccination. Hum Vaccin Immunother. 2016;12(4):1033-1034.

Subacute thyroiditis (SAT) is associated with viral (destructive) or post-viral (inflammatory) origin. [1] The most common clinical characteristics of SAT are female sex preponderance, anterior neck pain and fever. [2,3] Heart rhythm disorders and silent cervical forms have been described in SAT associated with SARS-CoV-2 infection, which occurs 16 to 36 days after resolution of COVID-19. [1,3] Symptomatic improvement occurs in a few days after initiation of therapy with steroids or NSAID. [3] Pyrexia of Unknown Origin (PUO) is a very rare presentation of SAT. [2] Hereby, a case of SAT, presenting with painful neck swelling and persistent fever (5 weeks duration), two weeks after resolution of COVID-19, is being discussed. The index patient was a 50-year-old obese, normotensive, diabetic (10 years duration, HbA1c 6.6% on SU, metformin, sitagliptin and dapagliflozin) male. TSH was suppressed (0.02 mIU/L), FT4 (3.06 ng/dl, upper limit of normal 1.48 ng/dl) and FT3 (3.9 pg/ml, upper limit of normal 3.71 pg/ml) were elevated. Total T4 and T3 were normal. HS-CRP was markedly elevated. IL-6 and TBG were not estimated. Cervical USG revealed diffuse hypeoechoegenicity of thyroid gland and thyromegaly. There was reduced uptake in thyroid scan (technetium). The patient became afebrile after 4 days of initiation of therapy with steroids or NSAID. But, she had only been using liraglutide for a week. Firstly liraglutide therapy was ceased and then 20 mg prednisolone and 40 mg beta-blocker therapy was initiated. At the 8 weeks' cessation, patient had no symptoms. Also thyroid function blocker therapy was initiated. At the 8 weeks' of cessation, there was no history of neck pain. Thyroid scan showed acute type of SAT.

Conclusions: It has been proven by previous studies that liraglutide has several effects on the thyroid gland. Liraglutide therapy might be related to subacute thyroiditis, as well.

**Thyroid**

**THYROID DISORDERS CASE REPORT**

**Subacute Thyroiditis Associated With Liraglutide**

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**Objective:** Incretins are expressed in thyroid tissue but without clearly-known clinical significance in human. The long-term effect of GLP-1 receptor activation on the thyroid is unknown. In the literature, liraglutide-related thyroiditis has not been reported yet and here we wanted to draw attention to this association. **Case Summary:** A 52-year-old woman with type 2 diabetes mellitus presented with thyroid tenderness, tremor and fever. Her lab results were as follows: undetectable TSH, free T4 (FT4) = 2.4 ng/dl (0.93-1.7), free T3 (FT3) = 4.4 pg/ml (2.4-4.4). Erythrocyte sedimentation rate (ESR) was 60 mm/hour, C-reactive protein (CRP) was 80 mg/L. Thyroid autoantibodies were negative. USG revealed that thyroid gland was in normal localization and the right lobe was 24x22x46 mm and the left lobe was 20x21x45 mm, isthmus thickness was 5 mm. The parenchyma was heterogeneous, coarsely granular, with bilateral patchy hypoechoic areas. All these findings suggested that the patient had subacute thyroiditis. When we examine the etiological factors of subacute thyroiditis in the patient, there was no history of trauma, no previous viral or bacterial illness, contrast agent exposure. But, she had only been using liraglutide for a week. Firstly liraglutide therapy was ceased and then 20 mg prednisolone and 40 mg beta-blocker therapy was initiated. At the 8 weeks' cessation, patient had no symptoms. Also thyroid function tests and other laboratory values were all in normal limits.

**Conclusions:** It has been proven by previous studies that liraglutide has several effects on the thyroid gland. Liraglutide therapy might be related to subacute thyroiditis, as well.

**Thyroid**

**THYROID DISORDERS CASE REPORT**

**Subacute Thyroiditis With Very Elevated Thyroglobulin Level in a Patient on Chronic Adalimumab Therapy**

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**Background:** Viral infections are a well-recognized cause of subacute thyroiditis (SAT), but other etiologies are occasionally seen. Here we present a case of SAT in a patient receiving chronic tumor necrosis factor inhibitor (TNFi) therapy. Serum thyroglobulin (Tg) levels in healthy individuals have been reported and range 1.40-29.2 ng/mL.
in males and 1.50-38.5ng/mL. There are no known serum Tg levels of reference in SAT.

**Clinical Case:** A 43-year-old woman with a history of psoriasis treated with adalimumab presented to her primary care physician (PCP) 2 months after her mother had noticed the patient’s new goiter. Patient recalled upper respiratory infection symptoms lasting 1.5 weeks, and subsequent agitation, insomnia, and a low-grade fever preceding the development of goiter. She denied neck compressive symptoms aside from mild dysphagia. She has been treated with adalimumab 40mg subcutaneous injection weekly for psoriasis with good results for the past 3.5 years and was on norethindrone 0.35mg daily for contraception. Her thyroid exam with her PCP revealed a diffuse painless goiter and she was clinically euthyroid. Labs revealed a TSH 1.44mIU/L [0.45-5.33], TT3 104ng/dL [60-181], FT3 3.3pg/mL [2.3-4.2], FT4 0.83ng/dL [0.89-1.76], and Tg 288.7ng/mL [1.6-50]. Thyroid antibodies (Tg, thyroid peroxidase and thyroid stimulating immunoglobulin) were negative. She tested negative for COVID-19. The neck ultrasound showed an enlarged pseudonodular thyroid gland with a heterogenous parenchyma and diffuse hypervascularity bilaterally (right lobe, 7.4 x 2.8 x 3.0 cm; left lobe, 8.4 x 3.2 x 3.6 cm; isthmus, 9 mm). A month later, repeat labs showed TSH 1.56mIU/L, TT3 85 ng/dL, FT4 0.74 ng/dL, and Tg 231.2 ng/mL. She was subsequently referred to Endocrine Clinic 4 months after her initial presentation. She had a persistent diffuse painless goiter, minimally decreased in size, and she remained clinically euthyroid. Labs included a TSH 1.75 mIU/L and FT4 0.78 ng/dL.

**Conclusion:** There are known associations of SAT with chronic TNF-i therapy in patients with psoriasis. Viral infections are an identified cause, but other triggers in chronic TNF-i therapy may exist. Serum Tg is elevated during SAT, but in this case Tg elevation was very significant. Although normal serum Tg levels are established in healthy individuals, there are no known reference values during SAT. Tg levels should not be used in acute illness period to evaluate illness severity or the resolution of SAT.

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**Thyroid DISORDERS CASE REPORT**

**Successful Management of Hyperthyroidism With Lithium and Radioiodine in a Patient With Previous Methimazole-Induced Agranulocytosis**

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**Introduction:** Antithyroid drug (ATD) therapy is the first-line treatment of Graves’ hyperthyroidism. Agranulocytosis, although rare, is a life-threatening condition associated with ATD therapy. For patients who recovered from ATD-induced agranulocytosis, surgery or radioiodine (RAI) therapy are adequate options to restore the patient’s euthyroid state. Here we report a case of ATD-related agranulocytosis where lithium therapy was used before RAI to control thyrotoxicosis and prevent worsening of hyperthyroidism.

**Case Report:** A 74-year-old female with a previous history of hypertension presented with a 2-month history of weight loss (12 lbs), palpitations and shortness of breath. She was afebrile with a heart rate of 110, a blood pressure of 149/80, a fine tremor and a moderate diffuse goiter. She had a normal eye exam. Laboratory evaluation demonstrated TSH <0.01 uIU/mL (0.35-5.5), FT4 3.11 ng/dL (0.51-1.65) and TSH receptor antibody (TRAb) 40 (<1,0 U/L), consistent with thyrotoxicosis due to Graves’ disease. She was started on methimazole (MMI) 15mg and metoprolol.

After four weeks, symptoms resolved and thyroid function tests (TFT) improved. However, after two months of treatment, she was hospitalized for fever, diarrhea and abdominal pain. White blood cell count (WBC) was 650/μL, and neutrophil count was 90/μL. A diagnosis of gastroenteritis and agranulocytosis was made and MMI was stopped. After seven days, symptoms resolved, the neutrophil count was 2200/ul and TFT were acceptable (FT4 1.25, ng/dL TT3 1.67 ng/ml, TSH < 0.02 uIU/mL). She was discharged without ATDs and a RAI dose of 20 mCi was scheduled. However, RAI therapy had to be postponed due to COVID-19 pandemic restrictions. After 3 weeks, TFT worsened and therapy with lithium carbonate 300 mg TID was started as the patient refused thyroidectomy. Lithium was initiated 12 days before RAI therapy and was maintained 7 days after the procedure. No side effects associated with lithium treatment were reported. TFT 7 days after RAI were FT4 1.43, ng/dL TT3 2.05 ng/ml and TSH < 0.02 uIU/mL. One month later, the patient was euthyroid without need for thyroid medication and remains on follow up.

**Discussion:** Serum thyroid hormone (TH) concentrations usually increase after RAI therapy for Graves’ disease, a worrisome fact in patients with increased risk for cardiovascular complications. Previous studies report that pre-RAI treatment with lithium prevents changes in serum TH concentrations and enhances RAI therapy’s effectiveness. Here, treatment with lithium was used to control thyrotoxicosis and prevent further increase in TH levels associated with RAI therapy. Lithium is particularly suitable for patients with ATD-related side effects before definitive therapy (radioiodine or thyroidectomy). The antithyroid effect of lithium in this setting should be further studied.

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**Thyroid DISORDERS CASE REPORT**

**Superior Sagittal Vein Thrombosis in the Setting of Thyroid Storm**

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A 25-year-old female with a two-month history of left lower quadrant pain, found to have an ovarian cyst and recently started on OCPs, presented to an outside medical center after a witnessed seizure with fever, tachycardia, and altered mental status. Her husband reported that she had been lethargic, complained of headaches, and had brief intermittent episodes of staring into space or stopping mid-task four days prior to the current event.

On physical exam, she was hypertensive to 170/90s, tachycardic to 120s, febrile to 101, with hyperreflexia and altered mental status without focal deficits. Bunch Wartofsky scale was calculated to be 50, suggestive of thyroid storm. Initial labs showed a suppressed TSH (<0.01 uIU/mL) and an elevated free T4 (7.27 ng/dL). Blood