SEVERE HYPOTHYROIDISM IN OLDER PEOPLE:
SPECIFIC FEATURES OF DIAGNOSIS AND TREATMENT.
CASE REPORT AND LITERATURE REVIEW

Anca Iuliana Pîslaru, Adina Carmen Ilie*, Irina Crăcană,
Ramona Onuțu, Ioana Dana Alexa
University of Medicine and Pharmacy “Grigore T. Popa” - Iași
Faculty of Medicine
Department of Medical Specialties (I)
*Corresponding author. E-mail: adinacarmenilie@yahoo.com

SEVERE HYPOTHYROIDISM IN OLDER PEOPLE: SPECIFIC FEATURES OF DIAGNOSIS AND TREATMENT. CASE REPORT AND LITERATURE REVIEW (Abstract): Prevalent causes of overt hypothyroidism are autoimmune destruction of the thyroid gland and previous thyroid surgery or radiation therapy. However, due to the side effects of amiodarone or lithium treatment thyroid dysfunction is increasingly frequent, especially in elderly patients who are anyway prone to a certain degree of hypothyroidism. This paper presents the case of a 66 years old patient who was admitted for severe physical asthenia and weight loss occurring during the past year. On admission we found anemia, which was considered secondary to a possible digestive tumor. The Comprehensive Geriatric Assessment (CGA) showed malnutrition, depression and a minor cognitive deficit. The absence of any obvious digestive cancer determined us to expand the investigation area. Cardiac ultrasound showed fluid in the pericardium which made us reconsider the diagnosis and take into account the presence of hypothyroidism, diagnosis that was subsequently confirmed by hormonal investigations and thyroid ultrasound. Hypothyroidism (either subclinical or overt forms) is a diagnosis that is easily overlooked in elderly patients because of its non-specific manifestations - symptoms may be wrongly attributed to normal aging or consequences of such diseases as depression, Parkinson or Alzheimer disease. Therefore, the measurement of serum thyroid-stimulating hormone (TSH) levels should be part of the biochemical work-up in all elderly subjects. Keywords: SEVERE HYPOTHYROIDISM, ELDERLY.

Hypothyroidism denotes deficient production of thyroid hormone by the thyroid gland. There are two clinical forms: subclinical and overt hypothyroidism (myxedema). Subclinical hypothyroidism is characterized by an elevated thyroid-stimulating hormone (TSH) level in the presence of normal serum free thyroxine (T4) and triiodothyronine (T3) concentrations. Subclinical hypothyroidism may progress to overt hypothyroidism in approximately 2-5% cases annually (1). The common causes of hypothyroidism are autoimmune destruction of the thyroid gland and previous thyroid surgery or radioiodine therapy, as well as various types of medication, including amiodarone, cytokines and lithium (2).

A mild degree of hypothyroidism is common in the elderly. It affects 5-20% of women and 3-8% of men. In elderly popu-
lation symptoms may be atypical: physical asthenia, lethargy, depression, cold intolerance, thinner skin and infiltration, especially around the face and hands, dilative cardiomyopathy and pericardial fluid. The heterogeneity of symptoms may mislead the diagnosis and delay the treatment; therefore measurement of TSH levels should be part of biochemical testing in elderly subjects and cases with TSH >10 mIU/L should be treated according to the cause and stage of the disease (2).

**CASE REPORT**

We present the case of a 66-year-old female patient from an urban area, who was admitted to the Geriatric Department because of severe physical asthenia and weight loss during the past year. The patient was diagnosed 2 years earlier with severe bradycardia possibly due to a sick sinus syndrome but not confirmed by ECG Holter monitoring; she had a type AAI pacemaker implanted anyway. The patient was also known with congestive gastritis and secondary anemia, treated at home with iron supplements.

On admission she presented severe physical asthenia, underweight (body mass index = 17), and the skin was pale, dry, hyper pigmented and thickened at face level. She had bradycardia (58/min) and a blood pressure of 90/60 mmHg. On palpation the abdomen was sensitive in the epigastrium where we found a mobile tumor of 3/4 cm. The deep tendon reflexes were bilaterally diminished and she presented paresthesia in her limbs.

The Comprehensive Geriatric Assessment (CGA) showed: malnutrition (MNA=14/30), minor cognitive deficit (MMSE=14/30) and moderate depression (GDS=7).

Blood tests showed mild anemia (Hb=10.2g/dl), dyslipidemia (Chol=281mg%, TG=160 mg%, LDL=180 mg%, HDL=30 mg%), stage 3 chronic kidney disease (creatinine clearance = 40.6ml/min/1.73m²) and a lower tract urinary infection.

At that time we thought that the main cause for patient’s symptoms was anemia due to several possible causes, such as: digestive tumor, chronic inflammatory process, responsible for the absence of response to iron supplements, or secondary to chronic kidney disease. While waiting for the examination of the digestive system, the patient presented sudden aggravation of the neurological symptoms (severe headache and delusions) associated with vomiting and severe secondary hyponatremia (Na=128.8 mEq/l). The absence of any obvious cause for the digestive manifestations and the persistence of neurological manifestations after the correction of sodium levels determined us to extend the investigations; cardiac ultrasound revealed the presence of fluid in the pericardium with preserved systolic function. Hypothyroidism would have been the ideal candidate to explain all the symptoms and hormone levels (TSH > 100 UI, fT4 = 0.15 ng/ml) and thyroid gland ultrasound (fig.1) (LTD: 1.0/2.3/1.2 cm (1.43 ml), LTS: 1.07/2.51/1.29 cm (1.80 ml), with hypoechogenic structure and low vascularization) confirmed the diagnosis.

Endocrinological assessment confirmed an autoimmune thyroiditis (AAT-TPO=127 UI/ml vs N: < 34 UI/ml).

The substitution therapy with levothyroxine (Euthyrox) was introduced with gradually increasing doses and the course was favorable: disappearance of abdominal pain, neurological manifestations, depression and cognitive disorder and correction of hemoglobin levels.
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Fig. 1. Thyroid ultrasound – appearance characteristic for autoimmune thyroiditis

DISCUSSION
The first cases of myxedema were reported in the literature more than 90 years ago when the effects of the thyroid hormones upon the heart (heart failure and dilative cardiomyopathy) were discovered. The first case of third degree atrioventricular block secondary to hypothyroidism was described in 1918 (Aub and Stern, 1918, cited by 3), and by 1930 there were 21 reported cases of hypothyroidism with secondary heart diseases (heart failure refractory to digitalis therapy, atrioventricular blocks of different degrees, pericarditis and cardiomegaly) (4). Schantz and Dubbs (cited by 5) reported a similar case in 1951, with adequate sinus rhythm after hormone replacement therapy. Over the years there were few reports of isolated cases of overt hypothyroidism, and they focused mainly on episodes of myxedema coma.

Hypothyroidism mainly affects women and the elderly (6). In elderly population this disorder is frequently associated with such drugs as amiodarone and lithium (7). The symptoms may be atypical and might be considered more likely secondary to aging than due to hypothyroidism, especially if there is no previous medical or pharmacological information available. The neurological manifestations occur in most of the cases: physical asthenia, bradypsychia or even different degrees of cognitive dysfunction, paresthesia, and depression. The carpal tunnel syndrome is very frequent, and the deep tendon reflexes are usually modified (8). The cardiac manifestations are insidious, manifested by the progressive increase in size of the heart cavities, episodes of left ventricular failure and pericarditis, which are unresponsive to
diuretic and digitalis treatment. ECG appearance varies from sinus bradycardia with nonspecific modifications of ST segment and T wave to third degree atrioventricular block or the torsades de pointes (9, 10, 11). Due to this heterogeneity of symptoms, the disease can progress for a long time under various other diagnoses and therapeutic schemes as it was the case of our patient, who was even treated for a possible sick sinus syndrome with the help of a pacemaker. Moreover, the persistence of digestive symptoms needed further investigations, such as endoscopy and colonoscopy, as persistent anemia highly suggested the presence of a digestive tumor.

Unlike the severe form, subclinical hypothyroidism is relatively frequent in the general population (15% in women and 10% in men) (12). Unfortunately, the onset of the disease in the geriatric patient may be wrongly attributed as manifestations of other diseases such as depression, Parkinson disease (7) or Alzheimer disease. The existence of co-morbidities and polypharmacy may mask the symptoms and signs of hypothyroidism and delay the correct diagnosis and proper treatment.

The most important feature of subclinical hypothyroidism is the increased likelihood (2-5%) to progress to overt hypothyroidism, the progress rate being proportional to TSH level. It was hypothesized that subclinical hypothyroidism would be a risk factor for cardiovascular disease (13).

The decision to treat the elderly patients with subclinical hypothyroidism is still controversial. A review published in 2007 (13), including 12 trials involving 350 patients monitored for 6 to 14 months, concluded that hormone replacement did not result in improved survival or decreased cardiovascular morbidity. The present consensus (1) for the elderly patients is that replacement therapy should be carefully considered due to the high risk for cardiovascular side-effects: tachycardia or aggravation of stable angina. Patients with subclinical hypothyroidism should be informed about the disease and its clinical manifestations and serum TSH level should be measured once or twice a year.

The recommended and appropriate replacement therapy for overt hypothyroidism is levothyroxine sodium. In elderly patients the initial dose should be smaller if there is any concomitant heart disease: 12.5 to 25 µg/day. Replacement dose titration should be cautious with close monitoring of patient symptoms and thyroid function tests. Because of the long half-life of levothyroxine sodium, small dosage adjustments may be performed at 6-week intervals by an increment of 12.5 to 25 µg until serum TSH is in the mid-normal range. After that, its measurement may be done every 6 to 12 months to monitor the dose and compliance (14). Thyroid hormone therapy has no beneficial effect above placebo in elderly individuals with normal serum TSH and T4 levels. The major risk of levothyroxine sodium therapy is overreplacement, with anxiety, muscle wasting, osteoporosis and atrial fibrillation as adverse effects.

CONCLUSIONS

This article draws attention on the polymorphism of signs and symptoms associated with myxedema in elderly patients. The risk to overlook hypothyroidism is high and may lead to unnecessary procedures, as was in our patient the pacemaker implantation for an AV block which could be managed only with thyroid hormone therapy.
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Hypothyroidism should be the first diagnostic assumption we should deal with patients under treatment with amiodarone and/or lithium, largely used in treating cardiovascular and neurological diseases highly characteristic for elderly. Hypothyroidism should be suspected in all patients with second and third degree atrioventricular block of unknown cause, refractory heart failure and idiopathic pericarditis.

Treatment for overt hypothyroidism was initiated immediately after the diagnosis was confirmed with excellent outcome; however, treatment should be closely monitored to avoid over-replacement.

REFERENCES