

3 | 2007

Thyroid International

edited by: Peter PA Smyth, UCD, Dublin

published by: Merck KGaA, Darmstadt, Germany



Clinical Aspects of Thyroid Disorders in the Elderly

Valentin Fadeyev

IT WAS WITH PROFOUND REGRET that we in Thyroid International learned of the death on June 15th 2007 of Professor François Delange. François' name was synonymous with the study of iodine deficiency disorders (IDD) and his immense contribution to the subject was unequalled and is highly unlikely ever to be surpassed. It was a great honour and privilege that his last publication "The Story of the ThyroMobil" was published in Thyroid International (issue 1-2007) in the weeks before he died and a source of some consolation that, although gravely ill, he saw it in print and expressed his satisfaction at its contents and presentation. François was the principal author of this report and although theoretically retired, when convinced of the merit of the project, approached the task with characteristic vigour and enthusiasm which readily infected

his co-authors. This was not his only association with Thyroid International as he had already produced a comprehensive and much quoted report on "Iodine Deficiency in Europe anno 2002" (issue 5-2002). François was Professor of Pediatrics at the Université Libre de Bruxelles, and to name some of his large number of commitments he was a board member, past Executive Director (1995–2001) and past Regional Coordinator for Europe of the International Council for Control of Iodine Deficiency Disorders (ICCIDD), former Chairman of the Neonatal Thyroid Committee of the European Thyroid Association, WHO consultant and PAHO consultant for studies on endemic goitre.



François Delange (1935–2007)

François Delange was one of the most prominent physicians of his time in the fight against iodine deficiency in the world. As a professor of Pediatrics he became involved in its deleterious effects, especially in children. His most important and groundbreaking work started in

the then Zaire (Congo) which he visited more than 30 times and it was in that region he and his collaborators described for the first time the myxedematous subtype of cretinism. His extensive list of publications included almost 400 peer reviewed publications as well as numerous contributions to books, conference proceedings and other forms of literature. He was a frequently invited speaker at and a long-term member of the European Thyroid Association as well as any forum where IDD were discussed. His knowledge of IDD was gained at the coalface having visited most

iodine deficient countries in the world once or more times.

Apart from his eminence as a clinical scientist, François was a delightful colleague and friend who liked nothing more than to talk about his magnificent garden whose loving upkeep he shared with his wife Nicole. To her, his family and friends we send our deep sympathy and assure them that his memory will live on wherever thyroidologists get together to discuss IDD to whose elimination he made such an unparalleled contribution.

Peter Smyth and the thyroid team of Merck KGaA

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Currently Prof. Fadeyev is associate director for Medical & Scientific Affairs of the Federal Endocrinological Scientific Centre of Russian Federation. He is a member of the European Thyroid Association (ETA) and has participated in several ETA training courses in Western Europe. Dr. Fadeyev has been the translator of "Thyroid International" into Russian for the last six years.

Thyroid International

Editor-in-Chief: Peter PA Smyth, UCD, Dublin

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Responsible at Merck KGaA, Darmstadt, Germany:
Sigrid Butz, M.D.

Thyroid International · 3–2007

Merck KGaA, Darmstadt, Germany, D-64271 Darmstadt
ISSN 0946-5464

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Clinical Aspects of Thyroid Disorders in the Elderly

Introduction

A considerable number of studies, medical reviews and scientific meetings are dedicated to the problem of thyroid disease management in the elderly population,^{1,2} some of which are also available on the Internet (www.hotthyroidology.com/editorial_148.html, <http://endotext.org/aging/index.htm>). This review discusses some aspects of the problem of direct clinical relevance based on the following observations:

1. The prevalence of both subclinical and overt hypothyroidism increases progressively with age.
2. In iodine-deficient areas, the prevalence of hyperthyroidism from functional thyroid autonomy also increases with age.
3. The rate of thyroid abnormalities whose pathological and clinical relevance is unclear (solitary and multiple colloid nodules, antithyroid antibodies) rises sharply with age.
4. Progressive aging of the population may lead to an increased incidence and prevalence of new cases of hypothyroidism and other thyroid disorders.
5. There is an increasing prevalence of chronic diseases among elderly populations, e.g., atherosclerosis, cardiac arrhythmias, osteopenia, which can be potentially associated with subclinical thyroid dysfunction, although there is a lack of strong evidence of their relationship in most cases.
6. A considerable portion of euthyroid elderly people may complain of some non-specific symptoms which resemble the signs of thyroid dysfunction.
7. The management and treatment of many thyroid disorders are problematic in elderly patients due to concomitant somatic diseases.
8. The following questions continue to be the most controversial: benefits of and need for thyroid function screening and treatment of subclinical hypothyroidism.

Some positions stated below are based on the personal experience of the author of this review.

Hypothyroidism

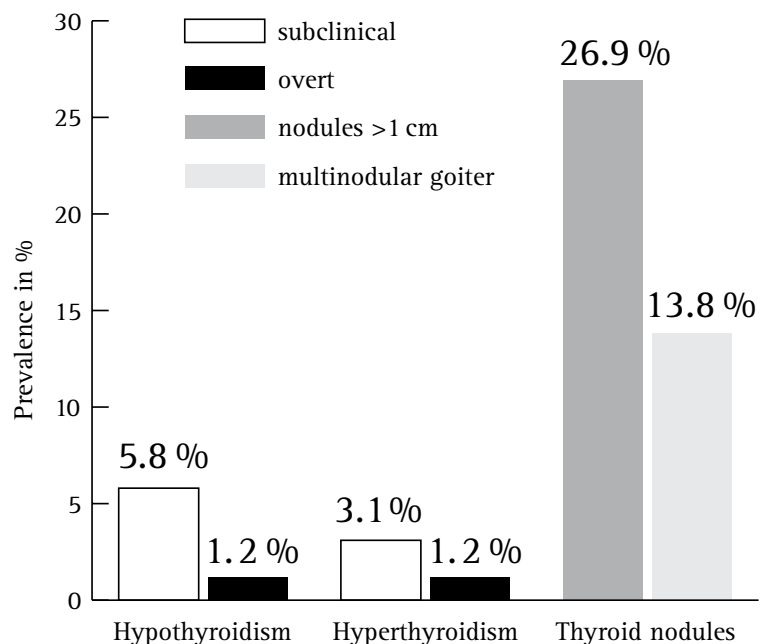
Practically all of the published epidemiological surveys indicate an increasing rate of hypothyroidism with age. Bembien D.A. et al.³ found subclinical hypothyroidism in 14.6% of women and 15.4% of men between the ages of 60 and 97. In the Colorado study involving 25,862 participants, elevated TSH levels were found in 9.5% of the study population; the prevalence of hypothyroidism depended on age and varied from 4% to 21% in women and from 3% to 16% in men.⁴ Several studies have shown that the rate of hypothyroidism is slightly higher with normal and high iodine intake compared to iodine-deficient areas.^{5,6} In our study among 260 nursing home residents (195 female, median age 79 years [60-101]) in Moscow, a region of mild iodine deficiency, thyroid dysfunctions were detected in 11.2% of cases, with subclinical hypothyroidism being the most frequent type of the dysfunction (*Fig. 1*).⁷

When comparing the data from different epidemiological studies, it should be remembered that they tend to differ substantially in design. First of all, they are likely to be performed in regions with different iodine intakes. Furthermore, they might include both representative and biased samples, e.g., hospitalized patients from a specialized medical center. Moreover, the authors often use different reference TSH values.

The increasing incidence of hypothyroidism in the elderly population is traditionally explained by the fact that autoimmune thyroiditis results in thyroid destruction many years after its onset. In fact, a lot of studies cited here have shown that a growing prevalence of hypothyroidism is accompanied by an increasing number of individuals with positive TPOAb. As a result, most physicians consider autoimmune thyroiditis to be the

Figure 1

Prevalence of thyroid disorders in the elderly: results of screening in nursing homes⁷



sole causative factor to account for every new case of hypothyroidism without doing further diagnostic tests such as TPOAb or thyroid ultrasound scanning, since the results of these tests would not influence the main treatment regime (levothyroxine replacement therapy).

Hypothyroidism, especially in elderly people, frequently presents with very nonspecific clinical signs and sometimes with no symptoms at all. Thus, in the Colorado study,⁴ 25% of the patients with overt hypothyroidism and 35% with subclinical hypothyroidism had no hypothyroid symptoms. On the other hand, in the same study, 4 or more symptoms and signs of hypothyroidism were reported by over 15% of euthyroid people. The latter fact would appear to have great clinical importance: if up to 15% of the euthyroid population have typical hypothyroid symptoms, these “symptoms” apparently may persist in many patients receiving levothyroxine replacement therapy despite clearly normal TSH levels.

The observed high prevalence of hypothyroidism and its nonspecific clinical features make a strong case for thyroid screening, i.e., evaluation of results of TSH assays without any particular clinical indications. However, this issue continues to be a matter of debate. Clinical guidelines from the mid and late 1990s suggest TSH screening might have some merit in the elderly population, especially in women.^{8,9} In contrast, the ATA in 2000 recommended checking serum TSH levels every 5 years starting at the age of 35.¹⁰ A central issue in the discussion of the pros and cons of screening for hypothyroidism is the importance of the treatment of subclinical hypothyroidism. In fact, one of the crucial arguments in favor of screening is the clinical and economic benefit of early levothyroxine (L-T₄) replacement therapy. Some studies, including those conducted prospectively, have shown that subclinical hypothyroidism is a risk factor for myocardial infarction and atherosclerosis in elderly women,¹¹ or is associated with higher all-cause¹² and coronary mortality.¹³ In a recent study involving 2,730 men and women, aged 70 to 79 years, with baseline TSH measurements and a 4-year follow-up, Rodondi N. et al. demonstrated that subclinical hypothyroidism was associated with an increased risk

for congestive heart failure among older adults with a TSH level of 7.0 mIU/L or greater.¹⁴ However, many other workers failed to confirm such benefits of L-T₄ treatment in subclinical hypothyroidism.¹⁵

The recently published study by Gussekloo J. et al.¹⁶ yielded unexpected findings. In this prospective study, hypothyroidism was associated with a lower (!) death rate and did not result in deterioration of the quality of life in an elderly population (aged 85–89). Similarly, Van den Beld A.W. et al.¹⁷ studied mortality in a sample of 103 elderly people (ages 73 to 94) and found that higher fT₄ and rT₃ concentrations were associated with lower physical function, and that low serum fT₄ was associated with a better 4-year survival. It should also be noted that subclinical hypothyroidism in the elderly can be transient. After 6–72 months of follow-up, 40 of 108 patients with subclinical hypothyroidism (37.4%) showed normalization of their TSH values.¹⁸

In 2004–2005, clinical recommendations published by Gharib H. et al.¹⁹ and Surks M.I. et al.²⁰ sparked a heated discussion. However, this debate has not yet led to a generally accepted consensus, and a majority of articles, presentations and symposiums are still entitled “To screen or not to screen?” or “To treat or not to treat?”. Intense discussions of the diagnosis and treatment of subclinical hypothyroidism in the paramedical sphere, mass media and patients’ organizations “adds more fuel to the fire,” as recently analyzed by A. Weetman.²¹

Most studies on subclinical hypothyroidism were performed in elderly populations. Therefore, if we accept the findings of these studies, including a recent meta-analysis²² indicating subclinical hypothyroidism as an independent risk factor of atherosclerosis and coronary heart disease (CHD), this does not mean that these elderly patients require L-T₄ replacement therapy. It is not clear whether such therapy influences long-term outcomes in patients with existing and realized cardiac risk. On the other hand, it is a matter of debate whether cardiac abnormalities can manifest in patients over 70 years of age with subclinical hypothyroidism but without CHD. The association between subclinical

hypothyroidism and CHD can be an argument in favor of L-T₄ replacement therapy in young patients in order to prevent the development of atherosclerosis. However, there are no long-term prospective studies on this issue. In our recent studies on elderly subjects with subclinical hypothyroidism and concomitant CHD, we did not find any significant advantages of therapy with L-T₄.²³

The controversial question of screening for hypothyroidism in elderly patients is the most likely to be answered positively even if not directly. It is a fact that almost all elderly people complain of signs and symptoms suggestive of hypothyroidism or have abnormal test parameters which can be related to this thyroid dysfunction (e.g., dyslipidemia, anemia). Thus, practically all such patients a priori have an indication for a TSH test. On the other hand, at a TSH level between 4.0 and 10.0 mU/L, a majority of practitioners would rather not prescribe L-T₄.²⁴ It is relevant to mention here that, in another patient population – pregnant women –, the situation is the exact opposite: while there is no doubt that subclinical hypothyroidism in pregnant women has to be treated, screening of thyroid function in pregnancy is not widely suggested since there is no evidence of long-term benefits.

Hospitalized elderly patients are very likely to have

clinically irrelevant abnormalities of thyroid laboratory tests because of severe somatic non-thyroid illnesses and/or a large number of prescribed medicines. In a study of 190 hospitalized patients over age 60, Simons R.J. et al. found that all thyroid function studies gave normal values in only 27% of patients and the TSH level was usually suppressed, but not elevated.²⁵

There is another question about the start of the replacement therapy in elderly patients with hypothyroidism, especially in those having concomitant somatic diseases. Traditionally, replacement therapy is initiated using low doses of L-T₄ (12.5–25 µg/d), followed by slow up-titration to the full dose (“start low – go slow”). There are a limited number of controlled studies on the strategies of L-T₄ replacement therapy. Ross A. et al.²⁶ recently demonstrated that initiation of replacement therapy with a full dose of L-T₄ (1.6 µg/kg/d) was safe and did not lead to serious adverse events in patients with an average age of 47 years (range 22 to 86), without quick relief of the hypothyroid symptoms. However, the principle of “start low – go slow” has a lot of followers despite the lack of evident clinical improvement, since fast achievement of euthyroidism does not balance the risk of transient overdose which may occur if the full administered dose of L-T₄ exceeds patient needs, especially in elderly patients.

Antithyroid autoantibodies

In areas with adequate iodine intake, the prevalence of positive TPOAbs in over-70-year-olds is 17.5% for women and 9.6% for men.²⁷ According to Ligthart G.J. et al.,²⁸ positive TPOAbs are more often found in hospitalized patients and in the general elderly population than in younger individuals.

Szabolcs I. et al.⁵ reported that the prevalence of TPOAb and/or TgAb in elderly people did not depend on iodine intake. In areas with low, normal and excessive iodine intakes, it was 19.3%, 24.4% and 22.8%, respectively.

Laurberg P. et al.²⁹ found a higher prevalence of goiter and positive antithyroid autoantibodies in a region with moderate iodine deficiency despite the lower rate of hypothyroidism compared to the region with normal iodine intake. Therefore, the appearance of TPOAbs might accompany the goitrous changes of the thyroid without Hashimoto's thyroiditis.

In our study among hospitalized patients in Moscow nursing homes, a region with mild iodine deficiency, the prevalence of positive TPOAbs (cut-off point 100 mIU/L)

was 11.2% (29/260), while an expected correlation between TPOAb and TSH levels was not found ($r=0.21$; $P<0.001$).⁷ Interestingly, the prevalence of TPOAbs among pregnant women in Moscow (median age 26 years) was found to be 9.8%,³⁰ which indirectly indicates that there is no considerable rise of TPOAb prevalence with age.

According to Sawin C. et al.,³¹ 67% of patients aged > 60 years with TSH levels >10 mU/L had increased TPOAb titers, while this parameter was increased only in 18% of individuals with normal TSH ($p<0.001$). However, one-third (33%) of hypothyroid patients did not have TPOAbs, and 68% of elderly individuals with TPOAbs did not have any thyroid dysfunction. These and other data suggest that detection of thyroid auto-

antibodies seems to be of little clinical and diagnostic importance in elderly populations compared to younger individuals. Moreover, the published data on antithyroid antibodies are difficult to evaluate and compare, since the authors usually use different cut-off points and laboratory kits.

The above facts can lead to a logical and already mentioned question, i.e., whether all cases of hypothyroidism in elderly people are solely related to autoimmune thyroiditis, or whether they might be a result of "idiopathic" thyroid atrophy.

Hyperthyroidism

In regions with normal iodine intake, the prevalence of hyperthyroidism among the elderly population is approximately 2%,³² and people older than 60 years comprise 10–15% of all patients with hyperthyroidism.³³ In the Framingham Heart Study, overt hyperthyroidism was found in 0.2% of patients while 3.9% of 2,575 patients over the age of 60 had suppressed TSH levels, and half of those had taken thyroid hormone preparations.³⁴ In the Colorado Study, 2.1% of the adult study population had subclinical hyperthyroidism, with 20% of them taking thyroid hormones.⁴ The prevalence of hyperthyroidism strongly depends on the studied region: in a population with low iodine supplementation, the prevalence of hyperthyroidism among elderly individuals can be higher because of a high rate of toxic thyroid nodules and possible late onset of Graves' disease.^{29,35} In Pescopagano, an iodine deficient area in Italy, the prevalence of subclinical hyperthyroidism was recorded in 15% of elderly subjects (> 75 years).³⁶

This figure can be even higher in hospitalized patients, since low TSH may result from both euthyroid sick

syndrome and treatment with some therapeutic agents. The prevalence of hyperthyroidism was 4.2% in older nursing home residents living in a mildly iodine deficient area (*Fig. 1*), and subclinical hyperthyroidism accounted for most of the cases (3.1%).⁷

The causes of hyperthyroidism in elderly subjects are generally the same as in young people. According to Diez J.,³⁷ multinodular toxic goiter, Graves' disease and treatment with L-T₄ were the leading causes of hyperthyroidism in patients aged > 55 years attending endocrine clinics and living in a mildly iodine deficient area (*Tab. 1*). These conditions are of the greatest clinical importance.

Clinical manifestation of hyperthyroidism in elderly individuals is of lesser intensity compared to young people. There are several reasons for this. First, they suffer with lesser frequency from Graves' disease, which has rapid onset (often with ophthalmopathy). Second, the use of beta-blockers for cardiovascular conditions may blunt the cardiovascular symptoms of thyrotoxi-

Table 1 Etiology of hyperthyroidism (n, (%)) among 313 hospitalized patients in a region of mild iodine deficiency³⁷

	Overt hyperthyroidism (n = 167)	Subclinical hyperthyroidism (n = 146)	Total (n = 313)
Toxic multinodular goiter	58 (34.7)	77 (52.7)	135 (43.1)
Graves' disease	63 (37.7)	4 (2.7)	67 (21.4)
Toxic adenoma	32 (19.2)	5 (3.4)	37 (11.8)
Iatrogenic thyrotoxicosis	3 (1.8)	47 (32.2)	50 (16.0)
Iodine-induced thyrotoxicosis	3 (1.8)	2 (1.4)	5 (1.2)
Subacute thyroiditis	3 (1.8)	0	3 (1.0)
Painless thyrotoxicosis	1 (0.6)	0	1 (0.3)
Factitious thyrotoxicosis	1 (0.6)	0	1 (0.3)
TSH-secreting pituitary adenoma	2 (1.2)	0	2 (0.6)
Unknown etiology	1 (0.6)	11 (7.5)	12 (3.8)

cosis. Hyperthyroidism in elderly people usually presents with weight loss, muscular weakness, poor appetite and cardiac arrhythmias. In the Framingham Heart Study, the rate of atrial fibrillation was 28% in a subgroup with low TSH (<0.1 mU/L) in comparison with 11% in a subgroup of patients with normal TSH levels.³⁴ In our study in hospitalized patients, TSH levels were significantly lower in subjects with atrial fibrillation (Fig. 2). Moreover, this trend persisted even after exclusion from the analysis of patients of the fibrillation group with any thyroid dysfunction. Thus, euthyroid (TSH 0.4–4.0 mU/L) subjects with atrial fibrillation had lower TSH levels than those without cardiac arrhythmias.⁷ Bearing in mind that functional autonomy in patients with multinodular toxic goiter is the main cause of hyperthyroidism, there may be some transient and self-limiting episodes of thyrotoxicosis prior to the final establishment of the autonomy. Moreover, in vivo testing with TRH can reveal the changes typical of hyperthyroidism in some patients with atrial fibrillation and give normal results in thyroid function tests.³⁸

Functional thyroid autonomy is apparently related to chronic iodine deficiency and is characterized by a longstanding subclinical course: it may start with mul-

tinodular euthyroid goiter with “hot nodules” and, as the number of autonomic thyrocytes increases, subclinical hyperthyroidism develops, and it may persist for many years without manifestation of overt thyrotoxicosis.

Prospective studies demonstrated that protracted endogenous subclinical hyperthyroidism (TSH↓, normal T₄ and T₃) was associated with a high risk of atrial fibrillation,³⁴ cardiovascular and all-cause mortality,³⁹ osteoporosis in post-menopausal women,⁴⁰ and dementia and Alzheimer's disease.⁴¹ Frost L. et al.⁴² recently showed in a prospective study that the patient's age at the time of the manifestation of hyperthyroidism is the most important risk factor for atrial fibrillation. In patients with atrial fibrillation due to thyrotoxicosis, the incidence of thromboembolism may be as high as 15%.⁴³

Subclinical hyperthyroidism is a matter of much debate in the literature, often in parallel with subclinical hypothyroidism, which has been reviewed above. This “alliance” in the author's view does not seem appropriate, since these two conditions are absolutely different from the clinical point of view. The main cause of subclinical

hypothyroidism is autoimmune thyroiditis, and a decision to initiate therapy is based upon several factors, such as the patient's age, concomitant diseases, pregnancy, and distressing signs and symptoms of hypothyroidism (e.g., dyslipidemia). In contrast, subclinical hyperthyroidism has many different etiologies, and the therapeutic approach taken primarily depends upon the cause of the hyperthyroidism. In elderly individuals, subclinical hyperthyroidism is rarely related to Graves' disease (see Table 1), characterized by hyperstimulation of the thyroid by antithyroid autoantibodies. Typical conditions leading to subclinical hyperthyroidism in elderly people include functional autonomy and overdose with thyroid hormones. There is no doubt about the need to correct the drug dose in the latter case, while multinodular toxic goiter with functional thyroid autonomy sometimes may present the dilemma of "To treat or not to treat subclinical hyperthyroidism?" Socioeconomic constraints rather than medical rationale tend to determine the way this problem is handled. In Russia and a number of other countries, for instance, ^{131}I therapy is not widely available. Under these circumstances, the treatment of multinodular goiter with subclinical thyrotoxicosis is a difficult question, since a surgical intervention can have a higher risk than thy-

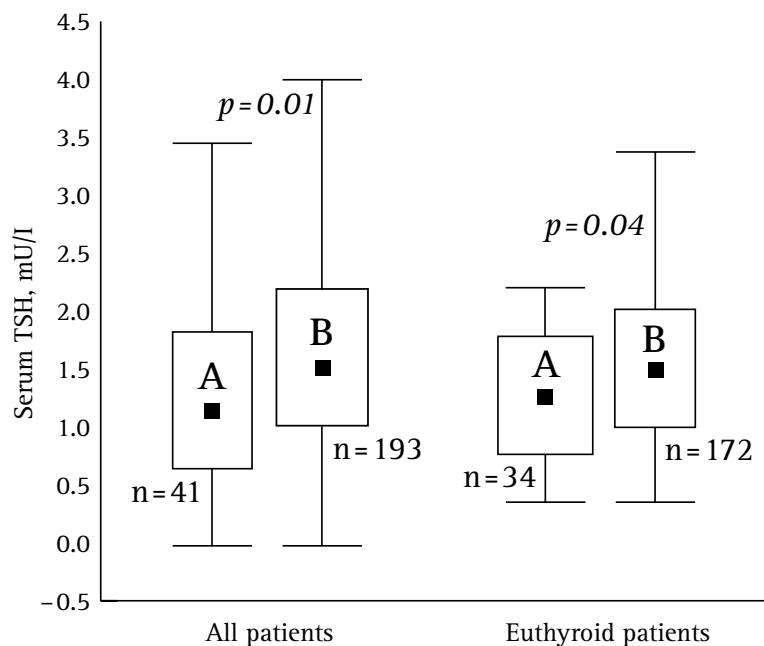
rotoxicosis itself in elderly patients with concomitant cardiovascular problems.

Another situation, which is also not very rare, is when subclinical thyrotoxicosis is found in an older patient with another severe somatic disease which has a poor prognosis (cancer, liver or kidney failure). Such patients usually take a lot of medications and their need for treatment of subclinical hypothyroidism often seems to be doubtful. In these situations, an individual decision should be made according to a patient's personal risk. Radioiodine (^{131}I) is the treatment of choice in elderly hyperthyroid patients, with both subclinical and overt hyperthyroidism arising from either Graves' disease or multinodular toxic goiter. Antithyroid drugs (thiamazole, propylthiouracil) are indicated to achieve a euthyroid state before radioiodine therapy, and they are discontinued usually 1–2 weeks prior to ^{131}I . Administration of ^{131}I in active hyperthyroidism is not recommended routinely, especially in elderly patients with cardiovascular disorders, because of the risk of massive thyroid destruction with enhanced thyrotoxicosis.

The primary goal of ^{131}I therapy is a stable euthyroid state. To achieve this in the case of Graves' disease,

Figure 2

Serum TSH level (median; 1&3 quartiles; min; max) in elderly people (median age 79 yrs) with (A) and without (B) atrial fibrillation⁷



ablative doses of ^{131}I are used, followed by replacement therapy. Autonomous “hot” nodules in multinodular toxic goiter may be selectively destroyed with ^{131}I , potentially leading to a euthyroid state without the need for hormone replacement.⁴⁴ However, this approach is not without a risk of recurrent hyperthyroidism. A recent study by Franklyn J.A. et al.⁴⁵ evaluated the long-term outcomes in 2,668 patients with toxic goiter >40 years old who were treated with ^{131}I in 1984–2002. The death rate in a subgroup without L-T₄ replacement therapy was higher than in the general population. The worse prognosis of such patients may be explained like this: if radioiodine treatment does not lead to overt hypothyroidism, patients usually experience longer or shorter episodes of thyrotoxicosis (at least, subclinical)

Nodular goiter

Nodular (multinodular) goiter is so common among the elderly population that many authors regard it as a natural result of thyroid aging. Thyroid nodules >1 cm in diameter were found in 26.9% (70/260; in 31.3% of women and 13.8% of men) of nursing home residents in Moscow (*Fig. 1*).⁷ In our autopsy study,⁴⁷ thyroid nodules >1 cm in diameter were found in 13.7% of cases, in women 1.6 fold more often than in men. This study was carried out in a large Moscow hospital, with 629 postmortem examinations of thyroids from randomly selected patients with no known history of thyroid disease (302 men, median age 63.5 yrs; 327 women, median age 74 yrs). In most of these cases, histological examination revealed colloid thyroid nodules (*Fig. 3*).

Thyroid nodules acquire clinical significance only in case of sizeable thyroid enlargement with symptoms of compression. In iodine deficient areas, multinodular goiter can be associated with toxic nodules (functional thyroid autonomy), followed by subclinical hyperthyroidism which later on may progress to overt hyperthyroidism.

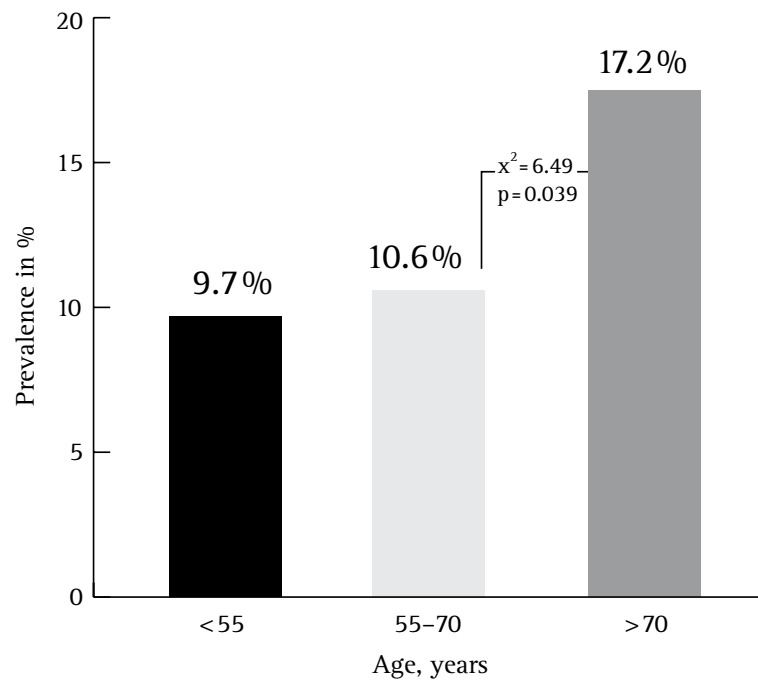
or hypothyroidism. Such episodes can alternate with a euthyroid state and, consequently, L-T₄ is prescribed or withdrawn. Therefore, these alterations may determine a worse prognosis.

Long-term, and even lifetime treatment with antithyroid drugs can be recommended to older patients with severe somatic diseases (sometimes, confinement to bed) or if ^{131}I treatment is unavailable (e.g., in Russia and some other countries the number of special radiological centers is limited). However, some evidence suggests a higher risk of antithyroid drug-induced agranulocytosis in elderly patients, which worsens their prognosis.⁴⁶

Recently published Clinical Guidelines of the American Thyroid Association (www.thyroid.org)⁴⁸ and especially the American Association of Clinical Endocrinologists (www.aace.com)⁴⁹ describe in some detail the principles of management and treatment of patients with thyroid nodules. These new guidelines, unlike the previous ones issued about 10 years ago, provide recommendations according to the level of evidence. It should be noted that the new AACE recommendations pay much attention to ultrasound signs of thyroid malignancies. However, they do not recommend thyroid ultrasound as a primary diagnostic tool (with some exceptions). Moreover, both recommendations are definitely against suppression therapy with L-T₄ for benign thyroid nodules. The ATA does not recommend routine suppression therapy of benign thyroid nodules (recommendation with “F” rating which means “strongly recommends against”). There is no solid evidence to support a positive influence of suppressive therapy on long-term prognosis in older patients with nodular (multinodular) goiter, while drug-related thyrotoxicosis, even subclinical, is clearly associated with a substantial risk of severe complications.

Figure 3

Prevalence of thyroid nodules (> 1 cm) in the elderly: results of autopsy study (n = 629)⁴⁴



Thyroid cancer

The incidence of differentiated thyroid cancer does not depend on iodine intake and comprises from 1 to 3 new cases per 100,000 of population per year, but the follicular variant is relatively more prevalent in areas of iodine deficiency.⁵⁰ On account of the higher prevalence of thyroid nodules in an elderly population living in an iodine deficient region, there is a lower probability (in percent) of finding a malignancy in a thyroid nodule in an iodine deficient area compared to a region with normal iodine intake. This probability increases in elderly men and is minimal in elderly women with multinodular goiter, living in conditions of iodine deficiency.⁵¹ In the above mentioned study in nursing home residents,⁷ papillary carcinoma was diagnosed in 2/70 (2.9%) patients with thyroid nodules. In the cited autopsy study,⁴⁷ histological examination of nodules >1 cm in diameter revealed thyroid cancer in 3.5% (3/86) of cases.

The principles of therapy of differentiated thyroid cancer are similar for patients of all ages. However, active suppression with L-T₄ is scarcely justified in elderly individuals with cardiovascular problems: firstly, because of safety considerations, secondly, as life expectancy for elderly people is often much shorter than the time needed to produce a significant progression of a differentiated thyroid cancer.

Moreover, a diagnosis of thyroid microcarcinoma (papillary cancer < 1 cm) in an old patient (over 80 years of age) can represent a clinical dilemma. Previous clinical guidelines did not recommend biopsy for nodules with diameters of < 1 cm, while recent recommendations (2006) of the American Thyroid Association (www.thyroid.org)⁴⁸ and the European Thyroid Association⁵² suggest biopsy of thyroid nodules < 1 cm with ultrasound signs of malignancy. Despite all these recommendations, a patient's age is not indicated anywhere. This situation is common in real clinical practice when ultrasound reveals a small suspicious thyroid nodule next to a large palpable one, and this small nodule turns out to be a cancer. The question is how to manage an older patient with cardiovascular disease and an incidentally occurring thyroid microcarcinoma where a papillary microcarcinoma is very unlikely to influence prognosis, even without appropriate treatment. On the other hand, it is obvious that any proved cancer is very "uncomfortable", for both a doctor and a patient, if the only assistance is a "wait and see" approach bearing in mind the ethical ramifications of this course of action.

Conclusion

Thyroid disorders in elderly people are the objects of a large number of clinical studies. Thyroid abnormalities are very common in elderly populations and they tend to present with discrete clinical manifestations. The data on the relevance of subclinical thyroid dysfunction and need for thyroid screening in the elderly population are controversial. The decision whether or not to treat a thyroid disorder in people at an advanced age should be based on many additional factors, such as concomitant diseases and the patient's social activity.

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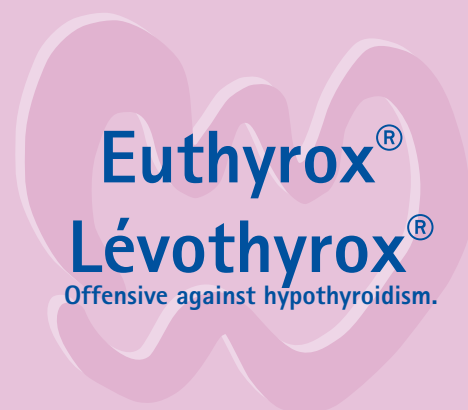


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