immediately—that would cost an enormous amount of money. But there is something we can do now, and we are doing so in my area: we can use quite a number of existing nursing homes, some of them run by religious orders. We know of two or three, for example, with whom we could have contractual arrangements who are quite ready to develop this sort of service, and this is what we hope to pursue. This can be done at least within the next 12 months, using the yardstick I have quoted of roughly 12 beds per 500,000 population.

Staffing

The third point is personnel. It is a surprising thing, that when you develop these smaller specialized units the general public pep up; they suddenly become interested. But I want to turn now to the professional staff—G.P.s, the hospital consultant, nurses, and others. I want to return to the need for a new attitude, because this again is something that we can do immediately. We can go away and translate what we have heard at this symposium today into action, by holding conferences, seminars, and discussion groups of our own. In my region we are holding three seminars on terminal care—one in Brighton, one in Canterbury, and one in Lewisham, to try and bring home to everyone that this is an area of care which has been long neglected and which must be tackled realistically and with determination.

And then we need to make you think of how you can weave this pattern of care into vocational training for general practitioners. Between the South-east Metropolitan and the Wessex Regional Hospital Boards we cater for 75% of all vocational training for general practitioners in this country. We are trying to weave training in terminal care into the vocational training scheme for general practitioners.

My fourth point concerns organization. Clearly 1974 is going to make things easier in a sense, because the hospital will be the community and the community will be the hospital—a single identity. But we will need something further—some form of post-care team, whatever you call it, made up of the doctor, the nurse, the social worker, the minister of religion, with full representation for the voluntary services so that they can be informed of what is going on and make their own contribution. And let us have one organization to which people who want help in caring for the patient dying at home can turn for the expertise and the resources that they really need—whether these people be general practitioners or the family itself.

One final point: do not forget the spouse. I often think that when we send flowers and letters of condolence to those who are bereaved they must be overwhelmed. I often think that it would be much kinder to wait a month, or three months to send our flowers. The loneliness, the heartache, and feeling of isolation that overwhelm people so frequently comes a month, three months, four months, a year after the actual death of the husband or wife. This is the time when we need to support and help them. The research of Maddison and Parkes has shown all too clearly that the morbidity rate amongst widows is twice as high as it is in single women of a comparable age. Here is another area that needs investigation: the post-care, based as it is likely to be in the future district of the reorganized health service, must keep a record of every case, so that there can be a continuing follow-up, to ensure that all the resources of the welfare state and of the voluntary bodies are brought to bear where they are needed most—to help those in need.

South-east Metropolitan Regional Hospital Board

K. R. O. PORTER, F.R.C.P., D.P.H., Senior Administrative Medical Officer

---

Hospital Topics

Hyperthyroidism—a Disease of Old Age?

V. RØNNOV-JESSEN, C. KIRKEGAARD

British Medical Journal, 1973, 1, 41–43

Summary

In a three-year project in which thyroid studies were undertaken for broad indications 49 cases of thyrotoxicosis were diagnosed; 28 of these patients were 60 years of age or older. Sixteen of these older patients had different forms of atypical thyrotoxicosis, and most were completely without the usual symptoms of the condition. It is concluded that thyrotoxicosis is more frequent in persons over 60 than in younger persons. Many older patients have various forms of masked thyrotoxicosis, and in many cases the correct diagnosis can be made only by undertaking thyroid studies on very wide indications.

Introduction

At the beginning of the century thyrotoxicosis was thought to be rare among persons over 50 years of age.^{1 2} In 1939 it was shown for the first time that the disease in women was more common after the age of 40 than before.³ A decade later 12% and 10% of thyrotoxic patients were found to be over 60 years of age in two large study groups.^{4 5} Lamberg *et al.*⁶ found that among 366 cases of thyrotoxicosis 135 (37%) were in patients over the age of 60. The authors considered that these results were due to an improvement in diagnostic facilities, an increased awareness of the possibility of finding this disease in older people, prolongation of the length of life, and the fact that the patients studied came from an area endemic for goitre, particularly of the nodular type. In a Danish study from 1964 to 1968 33 out of 110 patients with thyrotoxicosis (30%) were 60 years of age or older.⁷

It is not rare for thyrotoxicosis to take an atypical course in older patients. Thyrotoxic symptoms are often less pronounced, and at times typical symptoms are almost totally absent.³⁻⁶ In these "masked" forms the course of the disease can be dominated by cardiac incompenation,^{8 9} gastrointestinal

---

Medical Department of Frederiksborg County Hospital, 3600
Frederikssund, Denmark
V. RØNNOV-JESSEN, M.D., Physician
C. KIRKEGAARD, M.D., Physician

---

symptoms,¹⁰⁻¹² abnormalities of calcium metabolism (hypercalcaemia),^{13,14} osteoporosis with spontaneous fractures,¹⁵ or cerebral symptoms (confusion) and sometimes bulbar symptoms.^{15,16}

Peripheral myopathy is often seen in association with so-called apathetic thyrotoxicosis,^{6,17} which was first described by Lahey.^{18,19} Thomas *et al.*¹⁷ believed this form to be rather common, since it was found in 9 out of 36 cases of thyrotoxicosis collected during the course of one year. Lahey^{18,19} described these patients as middle-aged or older, without exophthalmos, and with slight or no goitre, a relatively low pulse rate, a firm, relatively cold, often hyperpigmented dry skin, and an appearance older than their stated age. The patients are calm and relaxed and often completely apathetic. The duration of disease before treatment is longer than with the more common hyperkinetic thyrotoxicosis^{17,19} and weight loss is greater. According to Lahey¹⁹ transitional forms exist between hyperkinetic and apathetic thyrotoxicosis. A change from the hyperkinetic to the apathetic form can be seen in some patients over the course of a very short period of time.²⁰

The present study was carried out during a three-year period to determine the real incidence of thyrotoxicosis in our area, especially in older persons.

Subjects and Methods

From 1 January 1969 to 31 December 1971 thyroid studies were undertaken on broad indications in the medical department of Frederiksborg County Hospital. These included unexplained weight loss, gastrointestinal complaints, symptoms of arteriosclerotic heart disease, symptoms of cerebral arteriosclerosis, involutional depression, senile confusion, universal osteoporosis, muscular adynamia, and, of course, goitre and clear-cut thyrotoxic symptoms.

Thyroid function was evaluated by serum protein bound iodine estimation, T-3 test, measurement of serum thyroxine concentration, and in a number of cases by ¹³¹I uptake.

Results

Thyrotoxicosis was found in 49 patients over 15 years of age. Their age and sex distribution is given in table I. Altogether 21 patients were aged under 60 and 28 were aged 60 years or more.

TABLE I—Age and Sex Distribution among the 49 Patients

	Age in Years							Total
	20-29	30-39	40-49	50-59	60-69	70-79	80-89	
No. of males ..	1	4	6	5	2	4	1	8
No. of females ..	4	6	5	3	13	7	3	41
Total ..	5	6	5	5	17	8	3	49

In the younger group there were two cases of recurrent thyrotoxicosis after a previous thyroidectomy, and in the older group there were four recurrences after medical treatment and two after thyroidectomy. The patients under 60 did not present diagnostic problems and all but one had been admitted to hospital for thyroid disease.

The older patients fell into two distinct sub groups. The first one comprised 12 patients with a series of classical symptoms and no diagnostic problems. The other sub group contained 16 patients, 9 aged 60-69 years and 7 aged more than 70. In only one case had the admitting physician considered the diagnosis, which was, however, primarily rejected in the department. Of the remaining 15 patients thyrotoxicosis was primarily suspected in the department in only one, a patient with symptoms of heart insufficiency.

The tentative diagnoses made on admission (table II)

included diseases of the gastrointestinal tract, particularly malignant ones, which together with cardiovascular and cerebral conditions predominated. Two patients were even thought to have myxoedema. Loss of weight, reduced appetite, gastrointestinal symptoms, malaise, and cardiac insufficiency were the most

TABLE II—Tentative Diagnosis in 16 Cases of Atypical Thyrotoxicosis

	No. of Cases		No. of Cases
Gastric cancer ..	3	Myxoedema ..	2
Pyloric stenosis ..	1	Hyperparathyroidism ..	1
Colon cancer ..	3	Osteoporosis ..	1
Emaciation ..	4	Mental depression ..	2
Arteriosclerotic heart disease ..	9	Goitre ..	1
Arteriosclerotic cerebral disease ..	3		

TABLE III—Symptoms and Signs in 49 Cases of Thyrotoxicosis

	Patients Aged 60 and Over		Patients Aged Under 60 (21 Typical Cases)
	Atypical Cases (n = 16)	Typical Cases (n = 12)	
Reduced appetite ..	14	2	2
Nausea and vomiting ..	6	1	2
Abdominal pains ..	4	1	2
Constipation ..	7	4	4
Diarrhoea ..	2*	2	8
Loss of weight ..	16 (mean 11 kg)	12 (mean 7 kg)	21 (mean 4 kg)
Malaise ..	13	7	10
Depression ..	6	0	0
Apathy ..	3	0	0
Cardiac insufficiency ..	10	5	3
Atrial fibrillation/ fluctuation ..	3	4	1
Heart rate over 90/min ..	8	3	14
Osteoporosis ..	12	6	1
Serum calcium over 5.5 mEq/l. ..	3 (13)†	0 (11)†	1 (16)†
Goitre { Nodular ..	2	5	3
Diffuse ..	6	7	15
Exophthalmos ..	0	1	4
Reduced heat tolerance ..	3	10	13
Increased sweat tendency ..	3	9	14
Hyperkinesia ..	1	9	18

*Occasional bouts only.

†Figures in parentheses indicate number of patients examined.

common complaints in the atypical group (Table III). The usual thyrotoxic symptoms—hyperkinesia, exophthalmos, reduced heat tolerance, and increased sweat tendency—were almost completely absent. Only eight had a slight goitre, and of these at least four had had their goitre since adolescence.

Protein bound iodine was estimated in all 16 patients with atypical thyrotoxicosis and gave results between 8.6 and 20.2 µg (normal less than 8.0 µg)/100 ml. The T-3 test gave raised values in 15 cases. Serum thyroxine was measured in 13 cases and was clearly increased in 12. ¹³¹I uptake was studied in nine cases and was significantly increased in all. Protein bound iodine and serum thyroxine estimations were performed in 48 and 41 of the 49 patients respectively. As shown in table IV no difference in the severity of thyrotoxicosis among the three groups could be shown by the results.

The duration of disease before diagnosis was difficult to determine among the 16 patients in the atypical group because of the insidious onset. Loss of weight was the only symptom which could be dated with reasonable certainty. This symptom had been present from 1 to 30 months (average 8 months). The average duration of weight loss of the remaining patients was six months.

TABLE IV—Protein Bound Iodine (P.B.I.) and Serum Thyroxine Estimations in the 3 Groups of Patients with Thyrotoxicosis

	Serum Thyroxine (normal 4.0-10.8) (µg/100 ml)		P.B.I. (normal 3.5-8.0) (µg/100 ml)	
	No.	mean + S.D.	No.	mean ± S.D.
Atypical cases aged 60 and over	13	16.9 ± 4.3	16	13.2 ± 3.6
Typical cases aged 60 and over	11	17.7 ± 7.5	12	12.3 ± 3.5
Typical cases aged under 60 ..	17	16.6 ± 4.0	20	13.8 ± 3.7

The differences between atypical cases and typical cases aged 60 and over and these atypical cases and typical cases aged under 60 were not significant. P values for P.B.I. were greater than 0.5 and 0.6 respectively, and for serum thyroxine greater than 0.7 and 0.8 (Student's *t* test).

Treatment.—Of the 16 patients with atypical thyrotoxicosis eight were treated with carbimazole alone and in seven thyroidectomy was performed after pretreatment with carbimazole and iodine. All became euthyroid during treatment and an average increase in weight of 11.5 kg was seen in the 13 patients observed for more than six months. In one patient symptoms remitted spontaneously and thyroid function became normal after four to five months.

Discussion

On 1 May 1970, about midway through the study period, the medical department was serving a population of 45,961 over 15 years of age. Of these, 7,510 (16.3%) were 60 years of age or older. As mentioned above there were six recurrences in the older group and two in the younger group. Thus there were 22 cases of newly discovered thyrotoxicosis in the older group and 19 in the younger. This means that during the course of the three-year period thyrotoxicosis was found in 22 out of 7,510 subjects aged 60 and over, whereas the corresponding figures for the younger group were 19 out of 38,451. Thus the yearly incidence of thyrotoxicosis in the older group men and women combined was seven times greater than in the younger group—0.98 and 0.14 per 1,000 individuals respectively. It is highly improbable that this difference was coincidental ($P < 0.0005$, $\chi^2 = 41.79$).

It was remarkable that 16 of the 28 patients over 60 years of age showed practically all the known forms of atypical thyrotoxicosis—though apathetic, gastrointestinal, and cardiac forms were the most common. These patients presented symptoms which were in no way different from the symptoms seen in older patients in any medical ward—cancer-like gastrointestinal symptoms (abdominal pains, nausea, vomiting, anorexia, constipation, loss of weight), symptoms suggestive of arteriosclerotic heart and cerebral conditions, senile confusion, depression, severe osteoporosis, etc. Although these patients failed to present the usual thyrotoxic complaints their thyrotoxicosis appeared to be of the same degree of severity, based on protein-bound iodine and serum thyroxine estimations, as was seen in both the younger and older group of patients with typical thyrotoxicosis.

Until the end of 1968 thyroid function was studied only on suspicion of a thyroid abnormality. In the three-year period 1966–68 42 cases of thyrotoxicosis were found, in which 12 patients (29%) were at least 60 years of age and only two could be characterized as atypical. This is in contrast to the results for 1969–71, in which of the 49 cases of thyrotoxicosis found

28 patients (57%) were more than 60 years of age and 16 were atypical.

There was no accumulation of old patients in any single year, the numbers being 8, 12, and 8 respectively. The probability that these variations in age distribution between the two three-year groups were incidental is less than 0.01 ($\chi^2 = 6.747$). As there was no reason to believe that age distribution for thyrotoxicosis had altered since 1966 it is reasonable to presume that the difference was due to the alteration of indications for thyroid studies.

Conclusion

This study from an area without endemic goitre shows that the incidence of thyrotoxicosis in persons over 60 years of age is greater than in persons below this age. The study also shows that many older patients (in the present study more than half) have various forms of masked thyrotoxicosis with symptoms quite different from the usual thyrotoxic syndrome complex. In many of these patients the correct diagnosis is made only if thyroid studies are undertaken on broad indications.

References

- ¹ Sattler, H., in *Handbuch der gesamten Augenheilkunde*, ed. T. Axenfeld and A. Elschnig, 2nd edn., vol. 9, p. 1. Berlin, Springer, 1909.
- ² Mackenzie, H., *Lancet*, 1916, 2, 815.
- ³ Cookson, H., *Lancet*, 1939, 1, 1363.
- ⁴ Bartels, E. C., and Kingsley, J. W., *Geriatrics*, 1949, 4, 333.
- ⁵ Iversen, K., *Journal of Gerontology*, 1953, 8, 65.
- ⁶ Lamberg, B. A., Berlin, M., and Hernberg, C. A., *Finska Läkaresällskapets Handlingar*, 1960, 103, 16.
- ⁷ Thommesen, N., Nirell, I., and Østergaard Kristensen, H. P., *Ugeskrift for Læger*, 1971, 133, 1663.
- ⁸ Levine, S. A., and Sturgis, C. C., *Boston Medical and Surgical Journal*, 1924, 190, 233.
- ⁹ Hay, J., *Lancet*, 1936, 2, 1377.
- ¹⁰ Freund, H. A., and Cooksey, W. B., *Journal of the American Medical Association*, 1930, 94, 1891.
- ¹¹ Hamburger, W. W., and Lev, M. W., *Journal of the American Medical Association*, 1930, 94, 2050.
- ¹² Verbrycke, J. R., *Journal of the American Medical Association*, 1931, 97, 513.
- ¹³ Stanley, M. M., and Fazekas, J., *American Journal of Medicine*, 1949, 7, 262.
- ¹⁴ Kirkegaard, C., *Ugeskrift for Læger*, 1971, 133, 594.
- ¹⁵ Chapman, E. M., and Maloof, F., *New England Journal of Medicine*, 1956, 254, 1.
- ¹⁶ Waldenström, J., *Acta Medica Scandinavica*, 1945, 121, 251.
- ¹⁷ Thomas, F. B., Mazzaferri, E. L., and Skillman, T. G., *Annals of Internal Medicine*, 1970, 72, 679.
- ¹⁸ Lahey, F. H., *New England Journal of Medicine*, 1931, 204, 747.
- ¹⁹ Lahey, F. H., *Annals of Surgery*, 1931, 93, 1026.
- ²⁰ McGee, R. R., Whittaker, R. L., and Tullis, I. F., *Annals of Internal Medicine*, 1959, 50, 1418.

Any Questions?

We publish below a selection of questions and answers of general interest

Tannic Acid in Contrast Media

Is tannic acid a safe component of contrast media used in radiography of the gastrointestinal tract?

Tannic acid was for some years used in barium enemas in the proportions of 1% or 2%. About six years ago there was a suggestion made by the American Food and Drug Administration that tannic acid in enemas caused liver failure and its use in America was banned. Since then about 14,000 follow-ups in the Massachusetts General have shown no significant effects from tannic acid when used in the correct proportion. However, its use has been largely abandoned because of improved

barium emulsions and the double contrast air enema is now thought to be better in the detection of polyps.

Cervical Erosions with the Pill

Many young nulliparous women on the pill seem to develop cervical erosions. What is the cause of such erosions, and what is the treatment?

True cervical erosions—which are not really erosions but outgrowths of columnar epithelium replacing the normal squamous covering of the ectocervix—are hormone-induced.