



## TSH

### WHAT IS THE STUDY ABOUT?

TSH is a pituitary hormone that regulates thyroid function. Usually when TSH is increased, it means that the person is hypothyroid and needs to be treated with thyroid hormone pills. Recent studies indicate that TSH levels increase with age. It is unclear if this is a normal part of getting older or means that these older people are becoming hypothyroid. Some professional societies have recommended that older people with elevated TSH levels are the same as younger people and should be treated with thyroid hormone. The aim of this study is to look at TSH and thyroxine ( $T_4$ ) levels in very old people (>90 years old) and compare them with TSH and  $T_4$  levels in younger people.

**THE FULL ARTICLE TITLE:** Atzmon G, Barzilai N, Hollowell JG, Surks MI, Gabriely I. Extreme longevity is associated with increased serum thyrotropin. *J Clin Endocrinol Metab* 2009;94:1251-4.

### WHAT WAS THE AIM OF THE STUDY?

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### WHO WAS STUDIED?

The study group was 232 healthy people >90 years of age (166 women and 66 men) who were already part of the Longevity Genes Study at Albert Einstein College of Medicine, Bronx, NY were studied. Their results were compared to a group of 188 healthy people 60-79 years old from the same area and a group of 605 people also 60-79 years old from across the country.

### HOW WAS THE STUDY DONE?

All of the people from the study group and the younger group had a physical exam, gave a blood sample that was measured for TSH and  $T_4$  and answered a questionnaire. The group from across the country had TSH measurements done as a part of another study national study. People who were not healthy or were known to have thyroid disease or on thyroid pills were excluded from the study.

### WHAT WERE THE RESULTS OF THE STUDY?

TSH levels were higher in the older study group than in either of the younger groups. Over half of the older group had TSH levels >2 mIU/l and these levels ranged as high

as 7.2 mIU/l (TSH normal range 0.4–4.0 mIU/l).  $T_4$  levels were the same in all of the groups.

### HOW DOES THIS COMPARE WITH OTHER STUDIES?

Several other studies have shown that TSH levels increase as we age. Some of these studies have shown that the  $T_4$  levels fell as well. The present study supports others that show higher TSH levels in very old people.

### WHAT ARE THE IMPLICATIONS OF THIS STUDY?

In people <65 years old, several studies have suggested that mild elevations of TSH are associated with heart disease and may be a reason to treat these people with thyroid hormone. This does not seem to be true in older people. This study suggests that a higher TSH may be normal in very old people and provides a reason not to routinely treat these individuals if their  $T_4$  levels are normal. Importantly, while higher TSH levels were found in the older study group, this study does not show that an elevated TSH allows you to live longer.

— Alan P. Farwell, MD

### ATA THYROID BROCHURE LINKS

**Hypothyroidism:** [http://thyroid.org/patients/patient\\_brochures/hypothyroidism.html](http://thyroid.org/patients/patient_brochures/hypothyroidism.html)

**Thyroid Function Tests:** [http://thyroid.org/patients/patient\\_brochures/function\\_tests.html](http://thyroid.org/patients/patient_brochures/function_tests.html)

### ABBREVIATIONS & DEFINITIONS

**TSH:** Thyroid stimulating hormone — produced by the pituitary gland that regulates thyroid function; also the best screening test to determine if the thyroid is functioning normally

**Thyroxine ( $T_4$ ):** the major hormone secreted by the thyroid gland. Thyroxine is broken down to produce Triiodothyronine which causes most of the effects of the thyroid hormones

**Hypothyroidism:** a condition where the thyroid gland is underactive and doesn't produce enough thyroid hormone. Treatment requires taking thyroid hormone pills.