



HYPOTHYROIDISM AND HYPERTHYROIDISM

Thyroid dysfunction and risk of death in patients receiving peritoneal dialysis

BACKGROUND

The kidneys are very important in cleaning the blood of toxins. Patients with declining kidney function (chronic kidney disease, CKD) may have to go on dialysis to help cleanse the blood when their kidneys no longer work on their own. Dialysis can be done in different ways, depending on the individual's condition and other factors. Hemodialysis is when the patient's blood is run through a machine to help cleanse it several times a week and peritoneal dialysis is when a bag of fluid is inserted into the abdomen then drained several times a day are two different types of dialysis. In general, CKD is a very serious condition, as once a patient goes on dialysis, they are have an increased risk of dying.

Individuals with CKD have a greater risk of an underactive thyroid gland (hypothyroidism) for reasons that are not clear. Having abnormal thyroid function like hypothyroidism or hyperthyroidism (an overactive thyroid gland) is itself associated with higher risks of death, perhaps as a result of heart disease, which has been shown both in the general population with normal kidney function and in those receiving hemodialysis. What is not known is whether having abnormal thyroid function is also associated with higher risks of death in those receiving peritoneal dialysis. This study was done to examine this question using data from a large U.S. national dialysis organization.

THE FULL ARTICLE TITLE

Rhee CM et al. Thyroid Functional Disease and Mortality in a National Peritoneal Dialysis Cohort. *J Clin Endocrinol Metab.* 2016 Nov;101(11):4054-4061.

SUMMARY OF THE STUDY

This was a study of 1,484 adults receiving peritoneal dialysis between 2007–2011. Among this group, the researchers looked at the relationships between TSH levels and death from any cause. Patient with a low TSH were considered to be hyperthyroid while those with an increased TSH were considered to be hypothyroid. The patients in this study were primarily women (52%) and

non-Hispanic whites (67%) with an average age of 60 years.

The average TSH in this group was slightly increased, with an average serum TSH of 5. Overall, 7% of patients had a low TSH and were considered hyperthyroid and 18% had an increased TSH and were considered hypothyroid. Both groups had increased rates of death. Those with the more severe hyperthyroidism and hypothyroidism had at highest risks of death. Hyperthyroidism and hypothyroidism in this study was defined by blood TSH results alone, with those patients with an undetectable TSH have a 2-fold increased risk of death and those with a TSH >10 having a 3-fold increased risk of death.

WHAT ARE THE IMPLICATIONS OF THIS STUDY?

This study shows that abnormal thyroid function, either hyperthyroidism or hypothyroidism, carries an increased risk of death in patients with CKD receiving peritoneal dialysis. The findings support those of similar studies done in patients receiving hemodialysis and even in those in the general population. The size of the study is large and thus represents its major strength. Overall, little is known regarding this topic, even though both thyroid dysfunction and CKD are relatively common conditions. Future research will help determine whether treatment of the thyroid dysfunction and normalization of TSH levels decreases the risk of death and will also help determine if there is a specific goal of what the TSH levels should be in patients with CKD.

— Angela M. Leung, MD, MSc

ATA THYROID BROCHURE LINKS

Hypothyroidism: <http://www.thyroid.org/hypothyroidism/>

Hyperthyroidism: <http://www.thyroid.org/hyperthyroidism/>

Thyroid Function Tests: <http://www.thyroid.org/thyroid-function-tests/>


HYPOTHYROIDISM AND HYPERTHYROIDISM, continued
ABBREVIATIONS & DEFINITIONS

Hypothyroidism: A condition where the thyroid gland is underactive and doesn't produce enough thyroid hormone. TSH levels are increased in most forms of hypothyroidism. Treatment requires taking thyroid hormone pills.

Hyperthyroidism: A condition where the thyroid gland is overactive and produces too much thyroid hormone. TSH levels are decreased in most forms of hyperthyroidism. Hyperthyroidism may be treated with antithyroid meds (Methimazole, Propylthiouracil), radioactive iodine or surgery.

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.

Chronic kidney disease (CKD): a condition of declining kidney function. When the kidneys no longer work on their own, patients need to go on dialysis to help clean the blood.

Hemodialysis: when the patient's blood is run through a machine to help cleanse it several times a week

Peritoneal dialysis: when a bag of fluid is inserted into the abdomen then drained several times a day to help clean the blood

Thyroid Awareness Monthly Campaigns

The ATA will be highlighting a distinct thyroid disorder each month and a portion of the sales for Bravelets™ will be donated to the ATA. The month of December is **Thyroid Development Awareness Month** and a bracelet is available through the ATA Marketplace to support thyroid cancer awareness and education related to thyroid disease.

