

Thyroid Nodules – 1. The Basics.

If you have been told that you have a thyroid nodule, you are not alone. Thyroid nodules are very common in the general population. They are more common in women than in men, and the prevalence of thyroid nodules increases with age. The prevalence statistics vary widely amongst various studies, depending on the population studied. Overall, if examined carefully, about 4% of individuals have palpable thyroid nodules and more than 50% have nodules visible using sonogram machines. One estimate places the prevalence of sonogram-identified thyroid nodules in women as high as 76%. In fact, most thyroid nodules are never identified.

You may wonder, "Exactly what is a thyroid nodule?" This term is used to describe any localized abnormality in the thyroid gland. Usually, a nodule is actually a cluster of otherwise normal thyroid cells that grow together to form a palpable or sonographically visible lump. Sometimes, a nodule is formed by a localized accumulation of fluid in the gland that forms a palpable cyst. Some nodules have a complex structure containing a combination of both cellular and cystic components. Sometimes, calcium and scar tissue accumulate in nodules, and they can become quite hard in texture. Occasionally, a thyroid nodule is an early stage of thyroid cancer. Fortunately, clinically significant thyroid cancer is quite rare. In the United States, the annual rate of thyroid cancer diagnosis in women is 18.2 per 100,000. In men, the rate is 6.1 per 100,000.

Why be concerned about thyroid nodules? The fact is that most thyroid nodules cause no harm. However, thyroid nodules can occasionally become large enough to be visible and cosmetically objectionable. Sometimes they can cause symptoms by pressing against other structures in the neck, such as the wind pipe, esophagus, or nerves to the voice box. Resulting symptoms can include pain, shortness of breath, dry cough, difficulty swallowing, choking sensation, or hoarse voice. Some thyroid nodules can become overactive, synthesize and secrete excessive thyroid hormone and cause the blood thyroid hormone level to become abnormally elevated, a condition called "hyperthyroidism." Sometimes, multiple nodules can accumulate in a thyroid gland, interfere with normal hormone production leading to a deficiency of thyroid hormone and a condition called "hypothyroidism."

Except for certain high-risk situations, the risk of cancer in a nodule larger than 1 cm (3/8") in diameter is about 5-7%. Interestingly, the risk of cancer in smaller nodules (less than 1 cm in diameter) is much higher. Most of these smaller cancers are classified as "papillary microcarcinoma" and appear to be harmless – people die with them, but not from them. In the United States, up to 13% of thyroid glands evaluated at autopsy contain papillary microcarcinoma. In Finland, the corresponding figure is 36%. Unfortunately, at present it is difficult to distinguish between a harmless papillary microcarcinoma and the early stage of a cancer that has the potential to cause real trouble in the future.

So the main challenge when evaluating a thyroid nodule is to determine whether or not it might cause the patient any harm. The most important initial issue is to rule out cancer. Once cancer is ruled out, most nodules can simply be left alone. If nodules cause hypothyroidism, the patient will need a thyroid hormone supplement. If nodules cause hyperthyroidism, they need to be removed surgically or neutralized with radioactive iodine (I-131). If nodules enlarge over time, and cause symptoms because of their size, they need to be removed. If cancer is either suspected or confirmed, surgery is also required.

In summary, most but not all thyroid nodules are harmless, and patients need an experienced endocrinologist to guide them through these complex issues.

For more on evaluating and treating thyroid nodules, see my next post.