



Role of active surveillance in thyroid nodule

Matin MA

Introduction

About 68% of the general population have thyroid nodules on routine ultrasonography. That does not mean all nodules should be treated by surgery as most of the nodules are benign and are discovered incidentally. So our primary goal of thyroid nodule evaluation is to determine whether it is malignant. After thyroid ultrasonography has been performed, the next step is measurement of serum thyroid-stimulating hormone. Hyperfunctioning nodules are rarely malignant and do not require tissue sampling. Nonfunctioning nodules and nodules in a patient with a normal or high thyroid-stimulating hormone level may require fine-needle aspiration based on ultrasound characteristics and size. Nodules with suspicious features and solid hypoechoic nodules 1 cm or larger require aspiration. The Bethesda System (categories 1 through 6). Benign nodules (Bethesda II) does not need surgery and need to follow – up with regular physical examination and ultrasonography to see the progress of the nodules (increase in size, suspicious) usually in every one year interval. As surgery is not without risk so many unnecessary surgical intervention lead to recurrent & superior laryngeal nerve damage, voice loss, parathyroid insufficiency, neck scar and life long thyroid hormone replacement. In the UK there is some variation of monitoring of the thyroid nodules. Some hospital clinics

discharge patients when cancer has been excluded, whereas other hospitals monitor nodules with repeat ultrasonography. In Ireland including our hospital we monitor benign nodules with repeat ultrasonography every one year interval that is called surveillance ultrasonography.

What is active Surveillance?

Active surveillance is watchful waiting and monitoring benign thyroid nodules and also in many cases of papillary microcarcinoma without any surgical intervention. There are some situation when benign nodules need surgery like rapidly growing nodules, pressure symptoms and on cosmetic ground.

Age, comorbidities and life expectancy should be considered when individualizing treatment, as total thyroidectomy for older adults with low risk PTC has been associated with higher incidence of complications and hospital readmissions

So active surveillance is a reasonable option for very low risk patients.

In fact, a significant proportion of patients, specifically older individuals with low-risk tumors, may benefit from active surveillance without a surgical intervention. In a large proportion of patients, PTCs are identified as either a papillary microcarcinoma (PMC) or a follicular variant thyroid microcarcinoma, both of which are defined as tumors of < 1cm in

diameter with a favorable prognosis. Due to the indolent course of the disease, active surveillance is a strategy implemented by several centers for thyroid nodules up to 1.5 cm in diameter, depending on individual institutional protocols. Tumors larger 1 and less than 1.5 cm (T1bN0M0) appear to have a similar course than tumors < 1 cm (T1aN0M0)

None of the patients with low risk PMC showed distant metastasis or died from thyroid carcinoma during the active surveillance period

Medical costs and adverse events from surgery (recurrent laryngeal nerve injury, parathyroid gland damage and/or anesthetic complications) are higher in patients that undergo immediate resection.

Contraindication to active surveillance

1. A noncancerous nodule may sometimes require surgery if it's so large that it makes it hard to breathe or swallow. We also consider surgery for people with large multinodular goiters, particularly when the goiters constrict airways, the esophagus or blood vessels.
2. Nodules diagnosed as indeterminate or suspicious by FNAC (Thy 3A or 3F) need diagnostic hemithyroidectomy to rule out so cancer.
3. Any clinical features of malignancy like lymphnodes or distant metastasis at diagnosis. signs and symptoms of invasion to the trachea,oesophagus, recurrent laryngeal nerve.
4. High grade malignancy on FNAC (Thy 4/ 5) or tall cell variant and poorly differentiated carcinoma.

Transition from active surveillance to surgery is considered when

1. Thyroid nodule size increases in the greatest dimension by at least > 3mm from initial measurement,

2. In cases where a new suspicious metastatic LN disease shows cytological evidence for thyroid cancer, and
3. When tumor volume increases by 50 % in three-dimensional measurements

Discussion:

Over the past three decades the world wide incidence of thyroid cancer has significantly increased and more than 50% of this increase is related to the identification of papillary thyroid microcarcinoma. Two prospective studies from Japan have shown that active surveillance is feasible for low risk papillary thyroid microcarcinoma patients as most of these tumours remain latent or with slow progression. Other studies showed similar results. On the other hand prognosis of papillary thyroid microcarcinoma is excellent with local recurrence rate of 2-6% and a distant metastasis rate 1-2% and a 20 year disease free survival rate is >99%. So for most of the benign thyroid nodules and low risk papillary thyroid microcarcinoma patients, immediate surgery may lead to more problems like surgical complications, neck scaring, hormone replacement. In another study in china showed active surveillance in Chinese patients with highly suspicious subcentimetre thyroid nodules has good oncological outcomes and can be used as a safe alternative to surgery. Younger patients (d"30) show a worse psychological status; therefore, more attention should be paid to younger patients.

Conclusion:

Active surveillance is now well practiced around the globe including USA, UK Ireland, China, Japan and many more countries. Unfortunately it is not practiced in Bangladesh and many unnecessary surgical operations are under going resulting in many surgical complications. So in the treatment of thyroid

nodules active surveillance can be used as an alternative treatment option to reduce the incidence of adverse effects without affecting treatment outcomes.

Professor Dr. M A Matin

Professor & Consultant ENT Surgeon,
Limerick University Hospital, Ireland
Email: abdul.matin@hse.ie
Secretary, Justyna Was
e-mail justyna.was@hse.ie

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