**Thyroid Nodules Work-up and Management**

**Resource:**

Up-To-Date; [www.uptodate.com](http://www.uptodate.com)

**Background:**

Evaluation of thyroid nodules is to exclude thyroid cancer which is 4% - 6.5% of the case. Non-palpable nodules have the same risk of malignancy and palpable nodules.

**Higher likelihood of Cancer:**

1. Children
2. Adults less than 30 years or over 60 years old
3. History of head and neck irradiation
4. History of total body irradiation for bone marrow transplantation
5. Family history of thyroid cancer
6. History of rapid growth of a neck mass
7. Fixed hard mass, obstructive symptoms, cervical lymphadenopathy or vocal cord paralysis

**Work-up:** serum TSH and ultrasound



1. **Ultrasound features**

|  |  |
| --- | --- |
| **Increase in risk of CA** | **Low risk of CA** |
| Hypoechoic | Hyperechoic |
| Microcalcifications | Large, coarse calcifications (except for medullary CA) |
| “twinkling” on B-flow imaging | Peripheral vascularity |
| Central vascularity | Resembles puff or Napoleon pastry |
| Incomplete halo | Spongiform appearance |
| Nodule is taller than wide | Comet-tail shadowing |
| Documented enlargement of a nodule |  |

1. **Recommendation for FNA**

|  |  |  |
| --- | --- | --- |
| **Ultrasound Findings and Clinical Features** | **Nodule Size** | **Recommendation** |
| 1. High risk history
 |  |  |
| * Nodule with suspicious ultrasound features
 | > 5 mm | A |
| * Nodules without suspicious ultrasound features
 | > 5 mm | I |
| 1. Abnormal cervical lymph nodes
 | all | A |
| 1. Microcalcifications present in nodule
 | > 1 cm | B |
| 1. Solid nodule
 |  |  |
| * And hypoechoic
 | > 1 cm | B |
| * And iso- or hyperechoic
 | > 1 to 1.5 cm | C |
| 1. Mixed cystic-solid nodule
 |  |  |
| * With any suspicious ultrasound features
 | > 1.5 to 2.0 cm | B |
| * Without suspicious ultrasound features
 | > 2.0 cm | C |
| 1. Spongiform nodule
 | > 2.0 cm | C |
| 1. Purely cystic nodule
 | Not recommended |

1. **Causes of Thyroid Nodules:**

|  |  |
| --- | --- |
| **Benign** | **Malignant** |
| Multinodular goiter | Papillary CA |
| Hashimoto’s thyroiditis | Follicular CA |
| Cysts: colloid, simple or hemorrhagic | * Minimally or widely invasive
 |
| Follicular adenomas | * Oxphilic (Hurtle-cell) type
 |
| * Macrofollicular adenomas
 | Medullary CA |
| * Microfollicular or cellular adenomas
 | Anaplastic CA |
| Hurtle cell (oxyphil-cell) adenomas | Primary thyroid lymphoma |
| * Macro- or microfollicular patterns
 | Metastatic carcinoma (breast, renal cell, others) |

1. Other work-up
	1. Calcitonin- not recommended as routine
	2. Anti-thyroid peroxidase (TPO) antibodies and thyroglobin- not recommended as routine

**Management:** 