Summary and Conclusion

Thyroid gland is the largest endocrine gland , formed of two lobes connected together by an isthmus ,crossing in front of the trachea. Each lobe is conical in shape . Its apex rests on the thyroid cartilage ,while its base is at the level of 5^{th} or 6^{th} tracheal rings

Diseases of the thyroid including developmental, inflammatory ,hyperplastic and neoplastic disorders.

Endemic goiter caused by iodine deficiency , serum T.S.H. will be increased ,leading to hyperplasia of the thyroid acini. Hyperplasia of the thyroid acini resulting also in physiological goiter due to relative iodine deficiency and the resulting increased serum T.S.H.

Patients with physiological goiter or endemic goiter ,treated by large doses of iodine , may lead to development of the colloid goiter ,whereas the thyroid acini becoming large , containing excess colloid and lined by flattened epithelium

Repeated fluctuations of serum T.S.H. level leads to the formation of simple (not toxic) nodular goiter . The disease is characterized by variable sized nodules separated by fibrous tissue.

Follicular carcinoma is common in middle ages . Simple nodular goiter and follicular adenoma are important predisposing factors . the disease spreads mainly by blood .

Papillary carcinoma is common in children and young adults External irradiation of the neck , genetic factor and papillary adenoma are predisposing factors. The disease spreads mainly by lymphatics

Medullary carcinoma is a rare tumor arising from calcitonin producing cells of the thyroid

Anaplastic carcinoma is common in old ages . The disease spreads mainly by direct invasion

Ultrasonography is considered the first choice in evaluation of the thyroid gland.

Malignant sonographic characteristics that suggest malignancy are : microcalcifications, irregular margin, marked hypoechogenicity , shape that was more tall than wide .

Cystic nodules are benign . Nodules with large cystic component are usually benign .However 30% of papillary carcinomas have a cystic component

Malignancy is more common in a solitary nodule . Multinodularity is usually associated with benign disease . However, papillary carcinoma may be multicentric

Hypoechogenicity is associated with malignancy by a sensitivity of 80 % & specificity of 53%

Absence of halo is associated with malignancy by a sensitivity of 66 % & specificity of 54 %

Microcalcifications is associated with malignancy by a sensitivity of 50% & specificity of 85 % , it is one of the most specific features of thyroid malignancy

Increased intranodular flow (chaotic pattern) is associated with malignancy by a sensitivity of 67 % & specificity of 81 %

Elastography is a newly developed technique that utilizes ultrasound to analyze the stiffness of a nodule by measuring the amount of distortion that occurs whew the nodule is subjected to external pressure

Lyshchik et al 2005 performed a study involving 52 thyroid nodule . They utilized both real-time elastography & off- line processed ultrasound elastograms . Cysts, benign nodules and malignant nodules had different elastographic patterns .Cyst seems as dark lesion with moderately defined margin .A benign nodule seeming slightly more darker than a cyst but the margin is ill-defined . A malignant nodule seeming more darker than a benign nodule and the margin is well defined . All lesions seeming have an irregular margins . Any lesion in off-line processed ultrasound elastograms seeming darker,slightly larger & and its margin is more irregular and more ill-defined than in real time elastography.

Dighe et al 2008 studied US elastography using carotid artery pulsations to avoid artifacts seen in the study by Lyshchik et al and development of thyroid stiffness index.

Rago et al 2007 performed a study involving 96 thyroid nodules.Tissue stiffness was scored from 1 to 5 . Scores 1, 2 and 3 correlate with benignity . Scores 4 and 5 correlates with malignancy .

Fukunari et al 2007 described elastography patterns of a thyroid nodules . Pattern 1 and 2 correlate with benignity . Patterns 3 and 4 correlate with malignancy

Kagoya et al 2010 performed a study involving 47 thyroid nodules . The strain index of a thyroid nodule and that of sternocleidomastoid muscle are measured . The nodule to muscle strain ratio is calculated . (SR) > 1.5 correlates with malignancy (SR) < 1.5 correlates with benignity