

Incidental finding of Thyroid Nodules Detected during Carotid Color Doppler Ultrasound in Asymptomatic Patients

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Abstract: To determine the prevalence of thyroid nodules detected during extra cranial carotid Doppler examination. **Method:** This is a retrospective review of prospective database including patients undergoing carotid color doppler examination in the time period (November 2016 through February 2017), demographic data, presence of thyroid nodules and presence of chronic medical illness were detected by reviewing electronic medical records. Statistical Analysis was determined using The Statistical Package for Social Sciences. **Result:** The study included 85 patients with mean age (\pm standard deviation) of 64 ± 14.99 . Fifty one (60%) males and 34 (40%) females were identified. Thyroid nodules were detected in 8 (9.4%) patients out of 85 (90.6%) patients. Five (62.07%) of which were females and 3 (37.93) were males. **Conclusion:** Thyroid nodules are a common incidental finding in carotid doppler examination occurring in females more than males.

Keywords: extra cranial carotid Doppler examination, thyroid nodules.

1. INTRODUCTION

Carotid duplex ultrasound is a non-invasive, accurate and cost effective imaging tool that uses high-frequency sound waves to create pictures of the carotid arteries and to identify carotid stenosis, It is increasingly becoming the gold standard imaging study before endarterectomy.^[1]

Due to close proximity of the thyroid gland to carotid arteries, evaluation of the thyroid gland during carotid Doppler ultrasound is an approachable technique, not time consuming and has many diagnostic benefits.

Thyroid incidentaloma is defined as nonpalpable thyroid nodules found during radiographic evaluation for a non-thyroid-related issue.^[2] One of the most common endocrine abnormality is thyroid nodules, they are usually discovered incidentally in asymptomatic patients during clinical examination and imaging including neck/carotid artery ultrasound, computed tomography (CT) or magnetic resonance imaging (MRI) for other reasons.^[3,4]

So, the aim of this study is to determine the prevalence of the thyroid nodules and their clinical significance during carotid duplex ultrasound.

2. METHOD

We conducted this retrospective review of prospective database at a tertiary medical center in Saudi Arabia; King Abdulaziz University Hospital.

We reviewed the duplex results of all patients undergoing extracranial carotid doppler from a prospectively maintained database during the time period from November 2016 through February 2017, and identified all incidental thyroid nodules.

This study was conducted under approval by the Research Ethics Committee at King Abdulaziz University Hospital, informed consent was obtained to participate in the study. All patients had a baseline history and physical examination, screening for symptoms of hyperthyroidism or hypothyroidism, and bilateral arm blood pressures. Data was collected from the electronic medical records using data collection sheet for specific data including gender, age, nationality, presence of thyroid nodule, presence of diabetes mellitus and presence of autoimmune disease.

The Statistical Package for Social Sciences, version 20 (IBM SPSS Statistics for Windows, IBM Corp, Armonk, NY, USA) was used for data analysis including frequencies, percentages and association between presence of autoimmune diseases and thyroid nodules.

3. RESULT

The study included 85 patients who underwent Carotid Doppler Ultrasound held between November 2016 and February 2017. Their mean age (\pm standard deviation) was 64 ± 14.99 . Table-1

Fifty-one (60%) males and 34 (40%) females were identified.

Thyroid nodules were detected in 8 (9.4%) patients out of 85 (90.6%) patients. Five (62.07%) of which were females and 3 (37.93) were males. Among patients who were positive for thyroid nodules 4 were diabetic, one has Systemic Lupus Erythematosus, one has a history of thyroid nodule and one is known to have hypothyroidism.

Participants (n=85)

Table-1 (Demographic and disease characteristics of participants)

Variables	Mean (Standard Deviation)	n (%)
Demographic Data		
Age	64 ± 14.99	
Gender		
Male		51 (60%)
Female		34 (40%)
Past Medical History		
Diabetes Mellitus		54 (63.5%)
Autoimmune Diseases		1 (1.17%)
Thyroid Disorder		2 (2.35%)

4. DISCUSSION

Patients with medical history of transient ischemic attack (TIA) or stroke and patients with risk factors for developing cerebrovascular accidents (CVA) which includes: Hypertension, Diabetes mellitus, Dyslipidemia and positive family history of cardiac disease. Thyroid nodule is a common incidental finding detected during different imaging modalities, however its clinical significance is not defined yet. ^[4]

We found that the prevalence of the thyroid nodules that were accidentally detected during carotid Doppler ultrasound in the previous studies was 13.4% and 9.4% in studies by Carroll et al ^[5], Steel et al ^[6], respectively.

We discovered that thyroid nodules were more common in females 5.8% (5 out of 34) rather than males 3.5% (3 out of 51) as supported by Entala Puca et al as they found that 34% of females were positive and 29.3 % were males. ^[7]

Medical history of patients with positive thyroid nodules in our study was obtained. Four of which were found to have diabetes mellitus. Unfortunately, no supporting data has been found in the literature describing this association. We recommend further studies to explore such an association.

REFERENCES

- [1] Gaitini, D. and Soudack, M. (2005). Diagnosing Carotid Stenosis by Doppler Sonography. *Journal of Ultrasound in Medicine*, 24(8), pp.1127-1136.
- [2] Wilhelm, S. (2014). Evaluation of Thyroid Incidentaloma. *Surgical Clinics of North America*, 94(3), pp.485-497
- [3] Rad, Masoud Pezeshki et al. "Incidental Thyroid Abnormalities On Carotid Color Doppler Ultrasound: Frequency And Clinical Significance". *Journal of Medical Ultrasound* 23.1 (2015): 25-28. Web.
- [4] Paschou, S., Vryonidou, A. and Goulis, D. (2017). Thyroid nodules: A guide to assessment, treatment and follow-up. *Maturitas*, 96, pp.1-9.
- [5] Carroll, B. (1982). Asymptomatic thyroid nodules: incidental sonographic detection. *American Journal of Roentgenology*, 138(3), pp.499-501.
- [6] Steele, S Cho, J. (2010). Screening of Thyroid Cancer and Management of Thyroid Incidentaloma. *Korean Journal of Family Medicine*, 31(2), p.87.. (2005). The Significance of Incidental Thyroid Abnormalities Identified During Carotid Duplex Ultrasonography. *Archives of Surgery*, 140(10), p.981.
- [7] Entela Puca.(2016). Thyroid Nodule and Thyroid Cancer Incidentally Detected by Ultrasonography in Adu+Lts Outpatients with Unknown Thyroid Disease. *International journal of life sciences*, pp: (138-143).