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Original Research Paper

CT EVALUATION OF NECK MASSES

Radiology

KEYWORDS: Spiral CT, Neck Mass

Dr Chaple Ramesh R. Associate Professor, Dept of Radiology Indira Gandhi Govt. Medical College, Nagpur, Maharashtra

Dr Parage G.G Radiologist, ADHS, Latur, Maharashtra

ABSTRACT

Background: Before the advent of cross sectional imaging, radiologists were of limited help in the diagnosis of neck lesions especially those involving the deep spaces of the suprahyoid neck. CT effectively demonstrates the neck spaces and helps in characterisation of pathological processes. The introduction of spiral (Helical) CT was an important milestone in the history of neck imaging. Material and Methodology: this prospective hospital based study included 80 patients of palpable mass in neck who were referred to the department of Radiodiagnosis in our institute for CT for the period of two years. The study was carried out using Siemens Dual slice Helical Somatom Emotion Duo CT Scanner. Results: The study included 46 (57.5%) males and 34 (42.5%) females. Maximum cases were found in age group 21-30 i.e. 17.5% with majority being in middle aged and elderly population. The most commonly encountered pathological were Nodal Masses (15%), followed by thyroid Masses (12.5%). Malignant masses were more common then benign masses (41%) in present study. Most common space for neck lesions were Visceral space (23%) followed by carotid space (15%). Most of the lesions were solid (91%) while predominantly cystic component was seen in 9% of the cases. The study shows that clinical diagnosis was in agreement with final diagnosis by histopathology in 71% of the cases while CT diagnosis was in agreement with Histopathological diagnosis in 90% of the cases. Conclusion: Spiral CT delineated the precise spatial extent of the masses in different neck spaces as well their morphological imaging spectrums. It is highly sensitive in clinically occult lesions.

Introduction: Anatomy of the neck has long been a challenge to clinicians and radiologists as many small but critical structures pass from head to the thorax through a region that is compact, yet remarkably flexible.[1] Coupled with complex disposition of the deep cervical fascia makes neck imaging difficult. Anatomically, the neck is divided into two main portions viz, the suprahyoid neck (SHN) and the infrahyoid neck (IHN). Each of these is subdivided into various neck spaces by the cervical fascia. These spaces can be affected by various pathological conditions ranging from congenital anomalies, infection, neoplasm and traumatic conditions. CT effectively demonstrates these spaces and helps characterization of pathological process. The introduction of spiral (Helical) CT was an important milestone in the history of neck imaging as it has many advantages over conventional CT.

Material and Methods: this prospective Hospital based study of evaluation of neck mass pathologies in patients using multidetector CT was carried out in the department of Radiodiagnosis in UR tertiary care institute. The study included 80 patients with palpable neck mass referred to our department for CT scan. Equipment used during study was-Siemens Dual slice Helical Somatom Emotion Duo CT scanner. All included patients were evaluated with detailed clinical history, physical examination and laboratory investigations where needed. All patients went through CT scanner with proper scanning technique and post processing image analysis. A meticulous follow up of all patients kept during study period. Histopathological confirmation was done where needed with all data entry into pre designed proforma.

Result: The study was carried out in 80 patients comprising 46 (57.5%) males and 34 (42.5%) females between the ages of 1 to 80 years. Majority of cases of neck masses presented in the middle aged and elderly population with maximum 17.5% of the cases in the age group 21-30 years.(Tab No.1)

Table No. 1: Age and Gender wise distribution (n=80)

Age group	Male	Female	Total
0-10	5	2	7
11-20	3	7	10
21-30	9	5	14
31-40	11	5	16
41-50	4	5	9
51-60	2	5	7
71 & above	2	2	4
total	46	34	80

The most commonly encountered pathologies were Nodal masses, which comprises 15% of the cases followed by Thyroidal masses (12.5%). The least encountered pathologies were of submandibular, sublingual and para-thyroidal origin (1.25%). Malignant masses (59%) were more common than benign masses (41%) in present study. CT features showed that necrosis was seen in (81%) of the malignant lesions, (15%) of the benign lesions. Post contrast enhancement pattern showed that heterogeneous pattern was seen in (85%) of the malignant lesions and 18% of the benign lesions. Homogeneous pattern was seen in (23%) of the malignant lesions and (54%) of the benign lesions. Most common space for neck lesions were visceral space (23%), followed by carotid space (15%). Most common pathology in buccinators space was of carcinoma of oral cavity (buccal mucosa), in sublingual, sub mandibular and carotid space were that of nodal in origin. Most of the lesions were solid (91%) while predominantly cystic component was seen in 9% of the cases, most commonly in masses of developmental origin and infections. Out of 7 patients who had metastatic cervical lymphadenopathy, CT suggested the primary in 4 cases, however primary was confirmed in 3 cases on Histopathology.

Table No.2: Final Histopathological Vs Clinical Vs CT diagnosis (n=80)

Final diagnosis	Final Histopath Diagnosis. No. Of cases	Clinical diagnosis No. Of cases	CT diagnosis No. of cases
Nodal	12	8	9
Thyroid	10	7	8
Larynx	9	6	9
Mandible	7	5	7
Oropharynx	7	6	7
Neural	6	4	6
Vascular	6	3	5
Oral cavity	5	3	4
Mesenchymal	4	2	4
Developmental	3	2	2
Inflammatory/ Infection	3	3	3

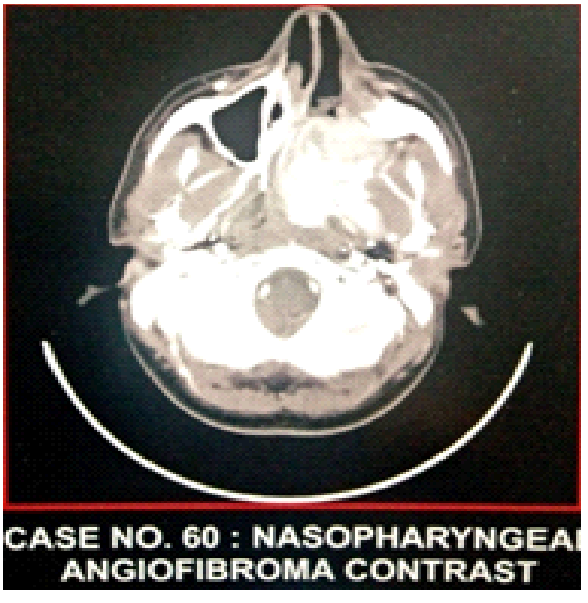
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Salivary Parotid	3	3	3
Nasopharynx	2	2	2
Parathyroid	1	1	1
Salivary Sublingual	1	1	1
Salivary Submandibular	1	1	1
Total	80(100%)	57 (71%)	72 (90%)

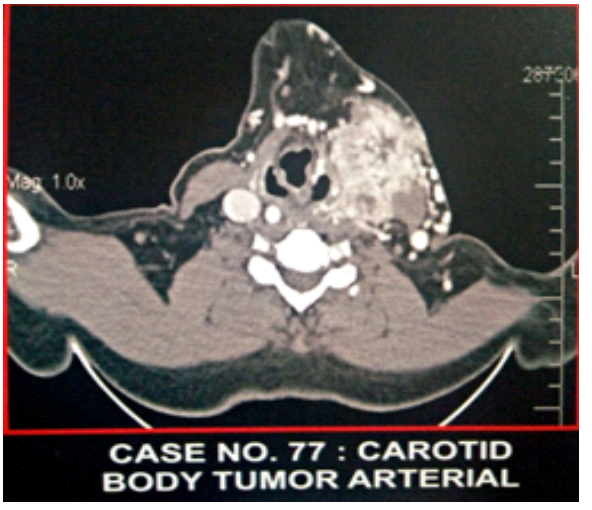
Observations in the table no.2 reveals that clinical diagnosis was in agreement with the final diagnosis in 71% of the cases while CT diagnosis was in agreement with the final diagnosis in 90% of the cases.

CT had influence on staging of malignancies in 26 out of total 47 (55%) patients of malignant neck lesions while CT findings influenced the management and treatment planning in 56(70%) out of 80 patients with neck masses.











Discussion:

majority of neck masses presented in middle aged and elderly population with 17.5% of the cases in the age group 21-30years followed by 16.5% in each 61-70 and 10-20 years of age group. Developmental and inflammatory lesions were common in younger age group. Thyroidal masses were common in middle age group. Nodal, larynx and hypo-pharyngeal masses were seen to occur more frequently in older age group. These findings were similar with the

findings of **S.H. Jafari, G Samar, F. Samiel, M.N. Hashemi.**[2]

In our study neck masses were predominantly solid 73 (91%) as compared with 7 (9%) were cystic. These findings are similar with the study of **Paul M. Silverman**[3]**.**

Out of 10 patients with thyroid lesions on CT, 4 were suspected to have multinodular goitre and 6 were suspected to have malignancies of thyroid with metastatic neck adenopathy. These imaging indications were in accordance with the findings of **Silverman PM**[5] **and Hopkins CR**[4]**.**

In our study 9 cases were of laryngeal disease, 8 were diagnosed as laryngeal cancer and one benign lesion was laryngeal papillomatosis. Out of 8 cancer patients 7 (87.5%) were males while 1 was female, comparable with the findings of **Sasaki CT and Carlson**[6] **and Vokes Wjo**[7] found laryngeal carcinoma to be about 5 times more common in males as compared to females.

CT was found to be extremely useful in study by **Ginsberg**[8] in localising space of origin and spread of neck infection as well as complications like IJV thrombosis.

In our study, 6 patients (7.5%) were found to be of vascular origin. Five patients were benign (83.3%) & one was malignant (16.7%). Phlebolith was seen which helped in making a positive diagnosis of Haemangioma in 4 patients. The imaging findings were in accordance with those of **Rabinov JD**[9]**.**

In our study most of the nodal masses were malignant 83% while 17% were benign. All nodal masses were solid with 75% were true positive & 25% were false positive. Most common involvement of level of lymph nodes was level II followed by level III & IV. Most common space involvement by lymph nodes was carotid space followed by posterior cervical space. These findings were similar in the study of **Mansuso**

AA. Harnsberger HR, Muraki AS. Stevens MH. [10] **& in Study of Kaji AV, Mohuchy T, Swartz JD.**[1]

Staging of malignancies is of obvious clinical significance as the treatment modality changes with the stage. **Stevens**[12] studied 40 patients of head and neck cancers in which CT influenced the staging in (45%) of the cases comparable with our study in which the CT influenced 55% of malignant cases.

Conclusions: CT helps in delineation of precise spatial extent of the masses in different neck spaces as well as it has good diagnostic accuracy based on morphological characterization. CT is highly sensitive in clinically occult lesions as well as it influences management and treatment planning via accurate staging of neck malignancies.

Bibliography:

1. Barton F. Branstetter IV, MD, and Jane L, Weissman MD. Normal Anatomy of neck with CT & MR imaging Correlation. Radiologic Clinic Of North America. Volume 38. November 5. September 2000.
2. S.H Jafari, G Samar. F. Samiel, M.N.Hashemi. Neck masses seen in 5 tehran medical centres Vol. 26. No 3-4 (1997).
3. ` Paul M Silverman. Multidisciplinary symposium: Head and neck cancer. Lymph node imaging: multidetector CT (MDCT). Monday 3 October 2005, 14:00-16:00.
4. Hopkins CR, Reading CC. Thyroid and parathyroid imaging. Seminars in US, CT, MR 1995; 16:273-95.
5. Silverman PM, Newman GE, Korobkin M. CT evaluation of thyroid disease. AJR1990;154:1079-85.
6. Peter M. Som and Margaret S. Brandwein. Salivary Glands: Anatomy and Pathology. Head and Neck Imaging. Peter M. Som.2003;39:2067-76.
7. Vokes EE, Weichelsbaum RR, Lippman SM, Hong WK. Head and neck cancer. N Eng J Med 1993; 328:184-194.
8. Ginsberg LE. Infection and inflammatory lesions of the neck. Seminars in US, CT MRI 1997;18(3):205-219.
9. Rabinov JD. Salivary gland imaging. RSNA 2000;38(5):1047-57.
10. Mansuso AA. Harnberger HR, Muraki AS. Stevens MH. Computed tomography of cervical and retropharyngeal lym.ph nodes: normal anatomy, variants of normal and applications in staging head and neck cancer. Part I: Normal Anatomy. Radiology 1983 Sep; 148(3):709-14.
11. Kaji. AV, Mohuchy T, Swartz JD.[121] Imaging of cervical lymphadenopathy. Semin ultrasound CT.1997 Jun;18(3):220-49.
12. Stevens MH, Hansberger HR. CT of cervical lymph nodes- staging & management of head and neck cancer. Ach Otolaryngol 1983;111(11):735-9.