J. Cardiovasc Disease Res., 2020; 11(2): 159 – 162
A Multifaceted Peer Reviewed Journal in the field of Cardiology
www.jcdronline.org | www.journalonweb.com/jcdr
P – ISSN: 0975 – 3583 Online: 0976 – 2833

Evaluation of Azygoesophageal Recess in Adults with the Help of Computer Based Tomography

[1]Dr. Amol Gautam, [2]Dr. Neeraj Wadhwa

[1] Professor, Department of Radiodiagnosis Krishna Institute of Medical Sciences, Karad - 415110, Maharashtra
[2] Department of Radiodiagnosis Krishna Institute of Medical Sciences, Karad - 415110, Maharashtra

ABSTRACT

Azygoesophageal recess (AER) is the right posterior mediastinal recess. That is, the interface between the right lower lobe lobe and the mediastinal Reflex below the Azygos vein is limited to the aortic hypers. Is limited by the middle of the esophagus and adjacent structures, and medially and posteriorly. Ascending part of the vertebral column, the azios vein and the anterior part of the pleura. The study examine different mediastinal and intrathoracic pathologies, altering the configuration of ezigesophageal recess (AER) on CT in adults. Multitudes of pathologies belonging to various systems alter the configuration of Azygoesophageal recess. There is scantiness of literature on CT of Azygoesophageal recess; for comparison of various pathologies. This study, it can be conclude that CT imaging is a promising imaging modality in evaluating various disease process altering the configuration of Azygoesophageal Recess, however due to relatively small sample size & dearth literature, more experience will be needed to establish the accuracy of CT imaging in correlating various pathologies with alteration of Azygoesophageal recess Configuration.

Keywords: Azygoesophageal recess, pathology, mediastinal, Computerized Tomographic, Imaging, Azygos

Correspondence:
Amol Gautam
Professor, Department of Radiodiagnosis
Krishna Institute of Medical Sciences
Karad, Maharashtra

Submitted: 26-04-2020
Revision: 29-05-2020
Accepted Date: 28-06-2020

DOI: 10.31838/jcdr.2020.11.02.25

INTRODUCTION

Azygoesophageal recess (AER) is the right posterior mediastinal recess, i.e. the interface between the right lower lung lobe and the mediastinal reflex below the Azygos vein arch up to the aortic hiatus, with the oesophagus and the adjacent structures lying medially and posteriorly limited by the ascending portion of the Azygos vein and the pleura anterior to the vertebral column[1]. Azygoesophageal recess is demonstrated on CT because of its high spatial resolution and is imaging modality of choice for depicting anatomy &detecting diseases in that particular area. Imaging studies are being performed for patients with both acute and long standing symptoms. Patients presenting for imaging may have variety of symptoms ranging from non specific complaints to symptoms indicative of Cardio-respiratory system, Musculoskeletal system to upper Gastrointensitinal System involvement but on imaging they may have changes in Azygoesophageal recess that may give a clue to diagnosis. Computed tomography (CT) may demonstrate masses not recognized on conventional radiologic examinations and may provide unique and specific diagnostic information relative to chest film in about half of times.[3]

Changes in shape of Azygoesophageal recess may possibly facilitate in detecting disease activity /stage of disease. There is paucity of literature on study of Azygoesophageal recess (AER) by Computed tomography & its correlation with various pathologies for any Significance& much has been concentrated only on enumerating possible pathologies altering the configuration on CT.

AIM AND OBJECTIVES

AIM OF THE STUDY

To examine different mediastinal and intrathoracic pathologies, altering the configuration of ezigesophageal recess (AER) on CT in adults.

OBJECTIVE OF THE STUDY

To confirm Mass/ disease altering the configuration of Azygoesophageal recess (AER) & possibly detect organ of origin and anatomic relation of mass to other organs. To find out any significance between alteration of Azygoesophageal recess configuration with different pathologies. To correlate with histopathological diagnosis whenever possible for diagnostic accuracy.

REVIEW OF LITERATURE

Lachman, 1942 [2,4-7] initially described the Azygoesophageal recess as right retroesophageal pouch or the "Space of Holzknecht" located lateral or posterior to the esophagus and anterior to the spine and ascending portion of the azygos vein. Very few studies are available in literature on radiographic study of Azygoesophageal recess with various disease pathologies. Radiographically abnormal Azygoesophageal recess is manifested as any convexity directed to right, abnormal opacity in Azygoesophageal recess or non visualization of right main stem bronchus/ bronchus intermedius.[2,5,8]

However all signs may not be seen in a single case and it is not possible to detect all lesions affecting Azygoesophageal recess on radiography.

Lindell MM et al, 1979[2,9] ,in a retrospective study of 103 Esophageal cancer with 79 cancer of middle / distal third only 20 had abnormality of Azygoesophageal recess.

Onitsuka H et al, 1980[10] first described focal dextroconvexity of Azygoesophageal recess in mediastinum : a normal CT variant in young adults at its superior most aspect that is its drainage into the superior vena cava. However until this time there was little attention given to anatomy of Azygoesophageal recess at various levels.

MATERIALS AND METHODS

STUDY DESIGN

Observational study

Individuals referred to CT center, Department of Radiodiagnosis, KIMS, Karad with clinical indications for imaging of CT thorax, were studied for configuration of

Azygoesophageal recess.

Selection Criteria

Inclusion Criteria

Cases with suspected involvement of Cardiorespiratory system/ musculoskeletal / upper gastrointestinal system were imaged over a period of 23 months.

Exclusion Criteria

Patients less than 19 years of age. Patients who were not able to suspend breathing in inspiration. Allergy to contrast media. H/o surgery, post treatment (post-chemotherapy, post- radiotherapy etc).

Equipment

16 slice MDCT Siemens Emotion held within suitable environment held in Department of Radiodiagnosis, KIMS, Karad was used for conducting the study.

CT Technique

Sections were taken using 130 KV and 70m As, slice thickness ~ 5 mm, with retro- collimation of ~ 0.6 /1.2 mm. Images were obtained with patient suspended breathing in maximum inspiration / intermittent suspended inspiration, in both lung (B 70 s) & soft tissue kernels (B 30 s) from the level of lung apices to the diaphragm and routinely including the adrenals.

Risk Factors Associated

The primary risk of concern is radiation exposure to patient in CT than other modalities but benefit is surpassed by diagnostic accuracy which is of much more importance for early detection and treatment of any hidden pathology in the Azygoesophageal recess. Consent was taken in prescribed proforma of CT centre.

OBSERVATION AND RESULTS

Table 1: Age Wise Distribution

Age Group	No. of Cases	% of cases
19-40 yrs	42	27%
40-60yrs	50	32%
>60yrs	64	41%
Total	156	

More than 60 Yrs >, 40 – 60 Yrs > 19-40 Yrs (73 % of cases belonging to above 40 yrs of age)

Table 2: Distribution of Cases According To System

System	Cases Observed N (%)	Cases Affected AER- N (%)
Respiratory	77 (27*)(49.3%)	36 (23%)
Mediastinum**	14 (9%)	05 (3.2%)
Lymphatic	33 (27*) (21%)	15(9.6 %)
Gastrointestinal	15 (9.6%)	11 (07%)
Cardiovascular	23 (14.7%)	13 (8.3 %)
Normal	21 (13.5)	-
Total	156	80 (51%)

Cases Common to both respiratory system & Secondary lymphatic system including anterior & posterior mediastinum but excluding heart, vascular system, upper gastrointestinal system & lymphatic system.

Table 3: Distribution of Cases within Respiratory System

Respiratory System	Cases Observed N(%)	Cases Affected AER- N (%)	p Value
Isolated Lung Parenchyma	16 (21 %)	09 (12%)	0.44
Isolated Pleura	2 (2.5 %)	2 (2.5 %)	0.13
Combined Involvement*	59 (76.5 %)	25 (32.5 %)	0.50

* Cases with lung +/- Pleura / Lymph node involvement

P value for pathology distribution within Respiratory System affecting AER > 0.05 - No significant Statistical difference.

Mediastinum

Includes pathologies involving Anterior & posterior mediastinum excluding heart, vascular system, lymphatic system, gastrointestinal system involvement.

Table 4: Mediastinum

System	Cases Observed N (%)	Cases Affected AER Out Of 14: N (%)	P Value
Mediastinum	14 (100%)	5 (35.7%)	0.22

P value for pathologies involving Mediastinum affecting AER compared to other systems >0.05 - No significant Statistical difference.

Table 5: Distribution of Pathology Affecting Azygoesophageal Recess (AER)

Gastrointestnal System		No. of Cases Affected AER	% of Cases Affeceted AER
Esophagus anomaly	Tumor	5/15	33 %
	Dilatation	-	-
Hernia	Hiatus+ Bochdalek hernia	(5+1) 6/15	40%
NA		4	27%

DISCUSSION

Multitudes of pathologies belonging to various systems alter the configuration of Azygoesophageal recess. There is scantiness of literature on CT of Azygoesophageal recess; for comparison of various pathologies altering its configuration as very few studies have been done in the past. Pathology was encountered in a total of 135 cases which was further divided into various systems involving it such as respiratory system (lung parenchyma & pleura pathology), mediastinum, lymphatic system (primary &secondary lymphatic), gastrointestinal system (Upper GIT - oesophagus & stomach) cardiovascular system (heart & vessels) & musculoskeletal system (involving vertebra). In this study Azygoesophageal recess on CT thorax of 21 normal cases had a dextroconcave contour i.e. concave to the right or had an approximately straight left wall.

These findings were consistent with study done by G. lund et al, 1982[11] in which they described the normal shape of Azygoesophageal recess as convexity towards the left or approached a straight line with frequent focal bulge in Azygoesophageal recess due to Esophagus (inferior aspect), Azygos vein (superior aspect)& rarely Aorta (in inferior aspect).

Dextroconvexity of Azygoesophageal recess was seen in only in 2 patients < 40 yrs of age without any pathology, only in superior aspect due to azygos vein draining into SVC bulging into recess. This correlates with a study conducted by Onitsuka H et al, 1980[10] in which Dextroconvexity on chest CT scans has been reported as a normal variant in 7% - 21% of cases, principally at the level of the carina and Azygos arch because of the Azygos vein draining into Superior vena cava.

Further, Frank H. Miller et al, 1993[2,7] studied age wise distribution of CT appearance of Azygoesophageal recess in infants, children & young adults. They measured chest size dimensions (AP & transverse) at the level of right stem bronchus, to correlate with convex or concave AER, however it was not statistically significant (p>0.5). No definite cause of variation was ascertained.

CONCLUSION

This was an observational study conducted at the CT center, Department of Radiodiagnosis, KIMS, Karad; aimed at CT evaluation of Azygoesophageal Recess. The study area covers a population of mostly low socio-economic status. Though CT imaging is relatively expensive, but cost is outweighed by its diagnostic performance and important additional information provided by CT in advance stages which is not easily assessed on clinical examination, besides this CT represents a Non invasive modality of choice for demonstrating Azygoesophageal recess & revealing the exact nature / precise anatomic detail & extent of pathology. This study reviews the variety of the disease processes involving the various systems altering the configuration of Azygoesophageal recess.

Although in this study, it can be conclude that CT imaging is a promising imaging modality in evaluating various disease process altering the configuration of Azygoesophageal Recess, however due to relatively small sample size & dearth literature, more experience will be needed to establish the accuracy of CT imaging in correlating various pathologies with alteration of Azygoesophageal recess Configuration.

CONFLICT OF INTEREST

None

BIBLIOGRAPHY

1. Fraiser and Pare's, 4th edition, volume-I, Azygoesophageal recess: 228 – 229.
2. Ravenel, James G., and Jeremy J. Erasmus. "Azygoesophageal recess." Journal of thoracic imaging 17.3 (2002): 219-226.
3. Peter J. Sones, Jr.1 ,William E. Torres , Richard S. Colvin ,W. Louis Meier , Perry Sprawls, Effectiveness of CT in Evaluating Intrathoracic Masses , AJR September 1982 :139:469-475 .
4. G.lund & H.H lien, CT of Azygoesophageal recess. Normal appearances. Actaradioldiagn (skotch) .1982 ; 23 (3A) ; 225-230
5. G.lund & H.H lien, Abnormalities of Azygoesophageal

recess at CT- Actaradioldiagn (skotch) 1983 ; 24 (1) ; 3-10.
6. Sun, Joo Sung, Kyung Joo Park, and Doo Kyoung Kang. "CT findings in patients with pericardial effusion: differentiation of malignant and benign disease." American Journal of Roentgenology 194.6 (2010): W489-W494.
7. Miller, Frank H., Steven W. Fitzgerald, and James S. Donaldson. "CT of the azygoesophageal recess in infants and children." Radiographics 13.3 (1993): 623-634.
8. Webb, W. R., et al. "Normal and diseased isolated lungs: high-resolution CT." Radiology 166.1 (1988): 81-87.
9. Lindell Jr, M. M., C. A. Hill, and Herman I. Libshitz. "Esophageal cancer: radiographic chest findings and their prognostic significance." American Journal of Roentgenology 133.3 (1979): 461-465.
10. Onitsuka, Hideo, and Lawrence R. Kuhns. "Dextroconvexity of the mediastinum in the azygoesophageal recess: a normal CT variant in young adults." Radiology 135.1 (1980): 126-126.
11. G. lund & H.H lien, CT of Azygoesophageal recess. Normal appearances. Actaradioldiagn (skotch) .1982 ; 23 (3A) ; 225-230

Cite this article: Amol Gautam Evaluation of Azgoesophageal Recess in Adults with the Help of Computer Based Tomography. J. Cardiovascular Disease Res. 2020; 11 (2): 159 – 162