

SHORT REPORT

Cervical mediastinoscopy in the diagnosis of lymphadenopathy in South AsiaSulaiman Bashir Hasan,¹ Fazal Wahab Khan,² Shiraz Hashmi,³ Ahsan Ehtesham,⁴ Rizwana Ahmed Magsi,⁵ Syed Shahabuddin⁶**Abstract**

We planned to determine the clinical utility and safety of mediastinoscopy in the pathologic diagnosis of mediastinal lymphadenopathy and to determine disease patterns in a tertiary care setting in Karachi. The retrospective review comprised record of patients who underwent mediastinoscopy over 25 years between July, 1990 and August, 2015. Of the 122 patients, records were complete for 88(72%). Mean age was 42.5 ± 12.9 years and 55(62.5%) were male. Overall, 60(68.2%) patients had benign inflammatory diseases; 25 (28.4%) had lymphoma or lung cancer which was accurately staged; 26(29.5%) had tuberculosis; 13(14.8%) sarcoidosis; and 11 (12.5%) had concomitant tuberculosis and sarcoidosis. No mortality or significant morbidity was recorded. Mediastinoscopy was useful in staging bronchogenic carcinoma and influenced the management in this series. It was found to be accurate in the diagnosis of other malignant as well as benign mediastinal pathologies, all of which were treatable.

Keywords: Cervical mediastinoscopy, Lymphadenopathy, Inflammatory diseases, Malignant diseases.

Introduction

Cervical mediastinoscopy is a minimally invasive surgical procedure for the biopsy of mediastinal lymph nodes for diagnosis¹ and for staging of known lung cancer.² It involves insertion of a mediastinoscope into the mediastinum through a cervical incision under anaesthesia. Biopsies of up to seven mediastinal lymph node stations can be obtained on both sides of the midline: 2, 4, 7 and 10 (Figure).

Accurate staging determines management of lung cancer³ and predicts outcomes. Non-invasive tests for identifying tumour metastases include chest X-ray, computed tomography (CT) scanning and positron emission tomography (PET) scanning. The latter has reduced the need for mediastinoscopy in lung cancer.¹

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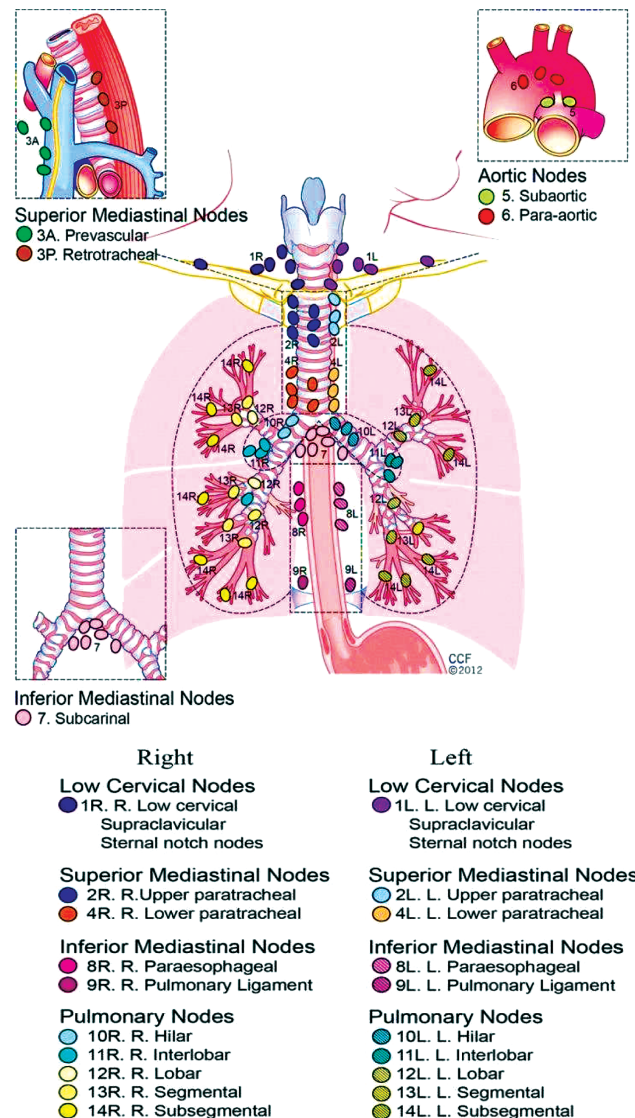


Figure: The International Association for the Study of Lung Cancer (IASLC) lymph node map.

Patients and Methods

The retrospective study was conducted at Aga Khan University Hospital (AKUH), Karachi, and comprised records of patients who underwent mediastinoscopy between July, 1990 and August, 2015. Ethical approval was obtained from the institutional review committee.

Analysis was performed on SPSS 20. Frequencies and percentages for categorical variables were calculated. Mean and standard deviation for normally distributed continuous variables and the median and interquartile range (IQR) for skewed variables were computed. Chi square was used to observe group differences. $P < 0.05$ was statistically significant.

Results

Of the 122 patients who had undergone mediastinoscopy, 88(72%) cases had complete records available and comprised the study sample. Mean age was 42.5 ± 12.9 years and 55(62.5%) were male. Median length of stay was 1 day (IQR: 1-16). Symptoms included fever, cough, dyspnoea, chest pain and hoarseness. In 21 (23.8%) patients there was no symptom. Moreover, 60(69%) biopsies were taken from nodal station 2,

49(55.7%) from station 4, 37(42.0%) from station 7, and 3(3.4%) from station 10. Overall, 60(68.2%) patients had benign inflammatory diseases; 25 (28.4%) had lymphoma or lung cancer which was accurately staged; 26(29.5%) had tuberculosis (TB); 13(14.8%) sarcoidosis; and 11 (12.5%) had concomitant TB and sarcoidosis. On frozen section, 3(3.4%) cases were read as benign but were found to be malignant on permanent sections. Among the 25(28%) malignant cases, 21(84%) had bronchogenic carcinoma (Table).

There was no mortality, serious complications or transfusion.

Conclusion

Mediastinoscopy allows accurate information from biopsies of lymph nodes. In our series, the majority (68.2%) showed non-malignant granulomatous diseases, predominantly TB 29.5%, sarcoidosis 14.8%, and concurrent sarcoidosis and TB 12.5%. In the West, 83% are diagnosed with malignancy, of which 81% have lung cancer.² TB is now uncommon in the West. Pakistan ranks 6th in the estimated global TB burden list, with an incidence of 181/100000, and prevalence 359/100000.⁴

Sarcoidosis is a diagnostic challenge in countries where TB is endemic.⁵ The estimated prevalence of sarcoidosis in this series was 27%, which seems higher than the West (12%).² A series from India reports 18%.¹ In our study, the prevalence of bronchogenic carcinoma was 24% and lymphoma 4.5%. Eight (33.3%) of these had N0 and N1 disease and underwent resection of the primary tumours. Thirteen (61.9%) were diagnosed with N2 or N3 disease and were spared a resection. It is probably best to do mediastinoscopy separately in an outpatient setting to allow for reports of the more accurate permanent sections.

Compared to the West, a very low proportion of procedures were performed for staging of bronchogenic carcinoma. The sensitivity and specificity of PET/CT for lung cancer staging is lower than mediastinoscopy.⁶ PET-negative nodes do have 10-15% incidence of containing metastatic disease and biopsy should be considered when the primary tumour is locally advanced or an extended resection seems likely to be required for cure. In Pakistan, the reliability of PET/CT may be lower due to TB being endemic, likely increasing false positive rates. Positive PET/CT may require histological confirmation.⁷ Moreover, on CT, enlarged nodes may be inflammatory whereas normal-sized lymph nodes may contain malignancy.⁸ Two patients had chemotherapy for lymphoma and had PET-positive mediastinal lymph

Table: Demographic and clinical characteristics of patients.

| Variables | n=88 |
|---------------------------------------|--------------------|
| Age in Years | |
| -Mean (\pm SD) | 42.5 (\pm 12.9) |
| -Median (Min-Max) | 44.5 (13-67) |
| Gender | |
| -Male | 55 (62.5) |
| -Female | 33 (37.5) |
| Hospital Stay Days | |
| -Mean (\pm SD) | 2.7 (\pm 3.1) |
| -Median (Min-Max) | 1 (1-16) |
| Symptoms* | |
| -Fever | 30 (34.1) |
| -Dry to productive cough | 22 (25.0) |
| -Dyspnea | 16 (18.2) |
| -Chest pain | 9 (10.2) |
| -Hoarseness of voice | 5 (5.7) |
| -No symptoms | 21 (23.8) |
| Clinical Findings | |
| Mediastinal lymphadenopathy or mass | 58 (65.9) |
| Known case of carcinoma/lymphoma | 23 (26.1) |
| Suspected Sarcoidosis | 3 (3.4) |
| Suspected TB | 3 (3.4) |
| Suspected cases of TB and Sarcoidosis | 1 (1.1) |
| Histopathological Diagnosis | |
| Bronchogenic Carcinoma | 21 (23.8) |
| Non-Hodgkin's lymphoma | 2 (2.3) |
| Hodgkin's lymphoma | 2 (2.3) |
| Tuberculosis (TB) | 26 (29.5) |
| Sarcoidosis | 13 (14.8) |
| Concurrent TB and Sarcoidosis | 11 (12.5) |
| Benign reactive changes | 7 (8.0) |
| Anthraxis or others | 3 (3.4) |
| Unspecified | 3 (3.4) |

*More than one symptoms may be present in same patient.

SD: Standard Deviation.

nodes on follow-up. Biopsies revealed granulomatous inflammation compatible with TB for which they were treated. An assumption of recurrent lymphoma would have led to further chemotherapy, with potentially disastrous consequences.

Endobronchial ultrasound-transbronchial needle aspiration (EBUS-TBNA) biopsy has reduced the need for mediastinoscopy in lung cancer. These needle biopsies are less effective in cases of lymphoma and granulomas as they only provide cytology. The accuracy of mediastinal lymph node biopsies by EBUS-TBNA for TB is 50%, sarcoidosis 60%, but for lung cancer, it is 93%.⁹

Mediastinoscopy has advantage over video-assisted thoracoscopic surgery (VATs) in the ability to biopsy both sides, avoidance of double lumen endotracheal tubes, chest tubes and hospitalisation. Complication rates are minimal. Bleeding from vascular injuries like innominate and pulmonary arteries and azygos vein, recurrent laryngeal nerve injury, pneumothorax, tracheal or oesophageal injury, pericardial puncture and wound infection have rarely been reported.¹⁰

Mediastinoscopy is a safe procedure with minimal morbidity and hospital stay. It is accurate in the staging bronchogenic carcinoma as well as in the diagnosis of other benign and malignant mediastinal pathologies. For lung cancer staging, mediastinoscopy can often be replaced by PET scanning and EBUS-TBNA. It still has distinct advantage over these modalities in inflammatory disease and lymphoma.

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