

Standard cervical mediastinoscopy in the diagnosis of mediastinal mass in Ghazi Al-Hariri Hospital

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Abstract:

Background: Mediastinoscopy is an integral part in the diagnosis of mediastinal mass. The most common indications for mediastinoscopy is for tissue sampling and determining the extent of lung cancer.

Objectives: To validate our experience with standard cervical mediastinoscopy and to evaluate the usefulness of cervical mediastinoscopy in the assessing the mediastinal diseases when imaging modalities are none diagnostic.

Material and Methods: A retrospective study of 16 patients between January 2012 and July 2014. Mediastinoscopy was indicated for diagnostic staging of nodal disease related to lung cancer in 8 patients (group I) and for isolated mediastinal lymphadenopathy in 8 patients (group II)

Results: There were 11 males and 5 females, with a mean age of 47 years. The mean operative time was 30 minutes and the mean hospital stay was 8 hours. In lung cancer (group I) there was positive results in 3 patients and negative results in 5 patients. In patients with isolated mediastinal lymphadenopathy (group II), TB was the commonest diagnosis. There was no surgical related morbidity or mortality in our study. The sensitivity and specificity of standard cervical mediastinoscopy in this study was 100%

Conclusion: Standard cervical mediastinoscopy is safe in the hands of well trained persons and needs a good knowledge of the anatomy of the region, cost effective, highly specific and still the first investigation of choice in the diagnosis of mediastinal nodal involvement.

Key words: Mediastinoscopy, cervical, tissue biopsy.

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Introduction:

Cervical mediastinoscopy is an invasive staging method which is used for staging of the superior and middle mediastinum. Cervical mediastinoscopy has become an integral part of the evaluation and staging of patients with suspected lung cancer as well as diagnosis other causes of mediastinal lymphadenopathy or mass [1]. The most common indication of mediastinoscopy is the initial staging and diagnosis of lung cancer. Other less common indications include evaluation of primary lymphadenopathy (e.g. lymphoma, sarcoidosis and silicosis) [2]. The need for mediastinoscopy in many patients with lung cancers derives from the absence of reliable none invasive method for differentiating benign from malignant lymph nodes. The nodes accessible to the standard cervical mediastinoscopy are level 2 and 4 (paratracheal), level 7 (subcarinal), and sometimes level 10 (tracheobronchial). (3)

Patients and methods:

This is a retrospective analysis of 16 patients with mediastinal lymphadenopathy, the data were collected from the patients files who were treated at Medical City (GHAZI AL-HARIRI HOSPITAL) Thoracic and Vascular Surgical department,

from January 2012 to July 2014, 11 patients were male and 5 patients were female with the age distribution between 25 to 70 and mean age 47years. A preoperative clinical diagnosis, none invasive investigation were carried out (CT SCAN) and other investigations were recorded. All patients have mediastinal nodal enlargement and all of them should not have any peripheral nodal enlargement.

Standard cervical mediastinoscopy was done as staging and diagnostic tool in 8 patients (50%) with right pulmonary mass associated with mediastinal lymphadenopathy (group I), and mainly as diagnostic tool in 8 patients (50%) with isolated mediastinal lymphadenopathy (group II). Cervical mediastinoscopy (Video-assisted mediastinoscopy. Karl-Storz) was performed under general anesthesia. After positioning, cleaning and draping, a 3cm transverse cervical incision was made 2cm above the suprasternal notch. Using sharp dissection, a plane was developed up to pretracheal fascia. This fascia was incised and dissected off, exposing the tracheal cartilaginous ring. The finger was advanced along the pretracheal plane and dissection done down to the carina. The mediastinum was carefully palpated for the presence of nodal disease or mass. The finger was then withdrawn and the mediastinoscope was advanced. A metal sucker was introduced through the channel of the mediastinoscopy and used to develop the plane in front of the mediastinoscope, for cautery as well as suction. Lymph node biopsy was taken from station 2RT and 4RT. In our study

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all mediastinoscopy biopsies had been sent for frozen section and proper histopathology, however, frozen section biopsy need experienced pathologist to interpret the results and we have to wait until we got the results while patient under general anesthesia. If the results was negative we proceed with thoracotomy, and if it is not (positive results) we finish the procedure.

Results:

Eight Out of the sixteen patients (50%) (Group I) who were studied, all of them have right pulmonary mass and mediastinal lymphadenopathy with negative cytology (Bronchoscopy), they were suspected to have bronchogenic carcinoma. Standard cervical mediastinoscopy with frozen section biopsy of the nodes revealed the presence of metastatic disease in 3 patients (2 patients with adenocarcinoma and 1 patient with squamous cell carcinoma) and this is proved by proper histopathology. In the remaining 5 patients, the result of frozen section was negative, so we proceed with thoracotomy (table 1), both tissue biopsies that obtained from thoracotomy and mediastinoscopy sent for proper histopathology, the result of mediastinoscopy biopsy was negative (true negative), while the result of thoracotomy biopsy was positive and this is mean that the tumor not metastasized. The remaining eight patients (50%) (group II) with isolated mediastinal lymphadenopathy, six patients with history of pyrexia of unknown origin, one patient is a known case of Hodgkin’s lymphoma (HL) sent for follow up, and the last patient with history of CA mandible treated three years ago also sent for follow up. In this group the TB was the commonest finding. The six patients with pyrexia of unknown origin, four patients proved to be TB. Lymphadenopathy, the fifth patient is proved to be sarcoidosis and the sixth patient is proved to be thymic carcinoma. The remaining two patients, the patient with CA mandible the biopsy was negative, patient with lymphoma the biopsy show recurrence (table 2). We had no surgical related mortality or morbidity in our series. In our study the sensitivity and specificity of standard cervical mediastinoscopy reach 100%. Over all study bronchogenic carcinoma was the commonest diagnosis (50%), while TB is the second most common diagnosis (25%). The mean operative time was 30 minutes and the mean hospital stay was 8 hours.

Table (1): Clinical diagnosis and histopathological correlation obtained after cervical mediastinoscopy in group I

Pre procedure Diagnosis/ Examination	No. of Cases	Histological Diagnosis	No. of Cases
Pulmonary mass + mediastinal lymphadenopathy	8	Adenocarcinoma	2
		Squamous cell carcinoma	1
		Negative	5
Total number	8		8

Table (2): Clinical Diagnosis and histopathological correlation obtained after cervical mediastinoscopy in group II.

Pre procedure Diagnosis/ Examination	No. of Cases	Histological Diagnosis	No. of Cases
1. Pyrexia of unknown origin with mediastinal Lymphadenopathy	6	TB.Lymphadenopathy	4
		Sarcoidosis	1
		Thymic carcinoma	1
2. Lymphoma (post chemotherapy mediastinal Lymphadenopathy)	1	Recurrence	1
3. Carcinoma of mandible +mediastinal Lymphadenopathy	1	Negative	1
Total number	8		8

Discussion:

Mediastinoscopy is an important method in the differential diagnosis of mediastinal pathology since it was presented by Carlens in 1959. [4] Mediastinoscopy has proved to be a safe, cosmetically accepted procedure, with negligible complications. Even with development of advanced imaging technique (CT, MRI, PET SCAN) still mediastinoscopy had high sensitivity and specificity. Rodriguez et al. [5] in a study of 181 patients recorded a sensitivity of 93.6%, specificity 100%. Nicolas and co- workers [6] performed 240 mediastinoscopies with a sensitivity of 98.3%, specificity 100%. Porte and colleagues [7] in their data on 400 mediastinoscopies reported a sensitivity of 96% and specificity of 100%. In our study performed 16 mediastinoscopies with sensitivity 100% and specificity of 100%. In IRAQ, mediastinoscopy had been used early in thoracic surgical practice mainly for the diagnosis of mediastinal lymphadenopathy. This practice had been stopped in late seventeens’ (as contact with professor Waleed M. Hussein and professor Mohammed Salih AL-Ani). Till 2012 the new video-assisted mediastinoscopy become available in the thoracic and vascular department of surgical specialty hospital (GHAZI AL-HARIRI HOSPITAL). The practice of mediastinoscopy started again. In our series, mediastinoscopy done mainly for diagnosis of mediastinal lymphadenopathy, while staging of bronchogenic carcinoma become second priority. With the introduction of CT scanning, several studies demonstrated that enlarged gland on CT scan are not necessarily metastatic [8, 9, 10], and this is proved by our study where there are 6 patients with enlarged gland on CT, but histopathology demonstrate negative result (true negative), So that histological proof is mandatory before a patient is judged inoperable. [11] So any patient with pulmonary mass should undergo mediastinoscopy in order to prove the diagnosis and staging of tumor and to exclude N2 involvement and to know the next step of management even that a negative result of

CT SCAN. [12], because N2 involvement, overall 10 years survival was no more than 10%. [7]

In a review on staging of lung cancer, MILLER et al. [13] stated that CT scan is frequently misleading, having a specificity of 89% and sensitivity of only 71%. The most accurate pre thoracotomy method of assessing mediastinal disease remains mediastinoscopy; this can be explained in our study, mediastinoscopy show sensitivity of 100% and specificity of 100%.

Over all study (16 cases) bronchogenic carcinoma was the commonest diagnosis (50%). In group II of our study in patients with isolated lymphadenopathy TB lymphadenitis was the commonest diagnosis (4 cases) which considered a big number in comparison to other studies. (6,14,15) in their series reported only 4 cases with TB lymphadenitis from 240 consecutive cases. This is because of rising incidence of TB in our country.

Conclusion:

Mediastinoscopy is an important, safe procedure in the diagnosis of mediastinal diseases and in the staging of bronchogenic carcinoma. All patients with bronchogenic carcinoma to prove to have operable tumor should undergo mediastinoscopy to exclude N2 disease, even that a negative result of CT scan regarding mediastinal lymph nodes does not eliminate the need for mediastinoscopy. Our study shows that even with current new generation of CT scan, still had low sensitivity and specificity. Mediastinoscopy is still the best diagnostic investigation of choice for paratracheal lymphadenopathy and other mediastinal pathology and proper studying of preoperative CT scan will help in the identification of successful candidates for cervical mediastinoscopy, thus allowing high sensitivity and specificity of procedure to be reached.

Authors contributions

Sabah N. Jaber And Abdulameer M. Hussein: Preparation of the patients, Performing surgeries for the patients, Collection of the data and participation in writing the paper

Bashar B. Aday: Participation in preparation of the patients, Follow up of the patients, Reference arraignment and Collections of the data

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