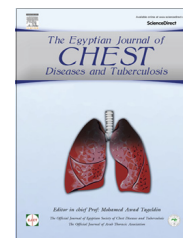




The Egyptian Society of Chest Diseases and Tuberculosis
Egyptian Journal of Chest Diseases and Tuberculosis

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ORIGINAL ARTICLE

The value of cervical mediastinoscopy in the diagnosis of mediastinal lesions



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Received 19 March 2015; accepted 31 March 2015

Available online 23 May 2015

KEYWORDS

Cervical mediastinoscopy;
Mediastinum

Abstract *Objective:* The aim of this study is to evaluate the value of mediastinoscopy in the diagnosis of mediastinal lesions.

Materials and methods: This is a prospective study. 33 patients suffering from manifestations of mediastinal lesions and appearance of shadow(s) on a chest radiograph, were included in our study. They include 16 males and 17 females. They were picked up from Al-Hussein University Hospital, Bab-Elshaaria University Hospital, and AL-Zahraa University Hospital in the period from 2009 to 2013. Their ages range between 24 years and up to 67 years.

Results: In 30 out of 33 cases (90.9%), cervical mediastinoscopy provided a confirmatory final diagnosis. Three cases had minor complications in the form of, wound infections in 2 cases, and one post-procedure severe pain controlled by narcotics, and no major complications.

Conclusion: Cervical mediastinoscopy is a safe, accurate and cost effective procedure minimizing hospital stay and allowing appropriate treatment to be immediately commenced upon diagnosis. Mediastinoscopy is still the best diagnostic investigation of choice for paratracheal and retrovascular mediastinal pathology.

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Introduction

Cervical mediastinoscopy is an invasive modality that is used for examining the superior and middle mediastinum for

staging of carcinoma of lung, as well as establishing histological diagnosis of mediastinal masses of uncertain etiology [3]. First described by [10], Jackson laryngoscope was inserted into the mediastinum through a supraclavicular incision and lymph node biopsies were taken.

Mediastinoscopy was initially described by Carlen's in 1959 [2], and is used to assess mediastinal nodal enlargement seen on CT and for staging of lung cancer.

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Peer review under responsibility of The Egyptian Society of Chest Diseases and Tuberculosis.

<http://dx.doi.org/10.1016/j.ejcdt.2015.03.030>

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Cervical mediastinoscopy is an important technique in diagnosis of mediastinal lymphadenopathy such as lymphoma, Hodgkin's disease, sarcoidosis, tuberculosis and also in detecting infections such as histoplasmosis and coccid mycosis. Also cervical mediastinoscopy can evaluate mediastinal lymph node groups, proximal hilar lymph nodes and the most superior/anterior portions of subcarinal lymphadenopathy and high and low paratracheal nodes can be visualized and biopsied but other groups cannot be evaluated by mediastinoscopy [9].

The procedure carries a low incidence of major complications, estimated at around 0.5% in the largest series. The commonest complication reported is iatrogenic injury to the major vessels, which can even require repair under a cardiopulmonary bypass circuit. Other reported complications include pneumothorax, left recurrent laryngeal nerve paralysis, tracheal or esophageal rupture, wound infection and major hemorrhage, and even damage to the tracheo-bronchial tree [5].

Thoracic CT often shows enlarged lymph nodes. It is the most commonly used non-invasive staging method of the mediastinum. Imaging techniques such as CT cannot always differentiate reliably between benign and malignant lesions, as enlarged nodes may be also inflammatory whereas normal-sized lymph nodes may contain malignancy [6].

The performance of CT, together with the need for a definitive tissue diagnosis, mediastinoscopy (with biopsy) and endoscopic ultrasonography (EUS)-guided fine needle aspiration (FNA) biopsy, transbronchial needle aspiration (TBNA) biopsy, and CT guided transthoracic FNA biopsy have become standard methods for tissue confirmation, with varying yields and complications [18].

Mediastinoscopy offers visualization as well as tissue diagnosis from an accessible lymph station, but it is an invasive procedure with a substantial cost and a small definitive morbidity [21].

Aim of the work

The aim of this study is to evaluate the value of mediastinoscopy in the diagnosis of mediastinal lesions.

Patients and methods

This prospective study revealed 33 patients suffering from manifestations of mediastinal lesions and appearance of shadow(s) on a chest radiograph. There were 16 males and 17 females included in this study. They were selected from the Al-Hussein University Hospital, Bab-Elshaaria University Hospital, and the AL-Zahraa University Hospital in the period from 2009 to 2013. Their age range was between 24 years up to 67 years.

Every patient was subjected to the following

- Full history & clinical examination. Laboratory investigations: Complete blood picture, ESR, fasting and post-prandial blood sugar, liver function test (liver enzymes, serum albumin, total protein, prothrombin time, prothrombin concentration, INR (International Normalizing Ratio), renal profiles, ECG, and tuberculin skin test.
- Radiological examinations: Chest X-ray (P-A and Lateral), chest computed tomographic scanning: CT scan was done with contrast for each patient and two windows; namely,

mediastinal and pulmonary windows were obtained, and ultrasound of the abdomen and pelvis.

- Pulmonary function tests; forced expiratory volume (FEV₁) and forced vital capacity (FVC) and ratio of FEV₁/FVC.
- Other diagnostic procedures were used according to the diagnostic needs; including:
 - Fiberoptic bronchoscopy (FOB), with lavage, brush and endobronchial biopsy if needed.
 - Standard cervical mediastinoscopy, to evaluate lesions in the anterior–superior mediastinum.

Every patient must have fulfilled the following criteria before mediastinoscopic intervention:

Routine blood tests such as CBC, liver, kidney function tests, blood coagulopathy profile must be within normal limits. Pulmonary function tests especially FEV1 must be more than one liter/1st sec. There was no confirmed pathological diagnosis made in other modalities.

Inclusion criteria

The accessibility of the lymph nodes and/or mass to the cervical mediastinoscopy. Patients with mediastinal lymphadenopathy on pre-operative CT scan should not have any accessible peripheral nodal enlargement. Diagnosis failed to be reached by other methods including EBUS guided or transbronchial lung biopsy.

Surgical technique

Anesthesia

Operation to be done under general anesthesia, the operating table should be adjusted to decrease venous congestion of the head and neck but not enough to increase the possibility of air embolism. The CT scans should be carefully reviewed prior to the procedure. Large peripheral line was inserted.

Induction of operation was done by propofol 2 mg/kg, fentanyl 2 mg/kg, and atracurium 2 micg/kg. Anesthesia was maintained during the procedure by inhalation of sevoflurine 2%. Ventilation was done by tracheal intubation with an armed single-lumen tube. Patients were positioned in the dorsal decubitus with a roll under the shoulders to provide extension of the cervical area. The neck is moderately extended by an interscapular roll in order to draw the trachea from the mediastinum into the neck.

The endotracheal tube should be on the anesthesiologist's site. Circulation of the right arm is monitored using a pulse oximeter. A dampened waveform may indicate innominate artery compression.

Surgical technique

After sterilization, 3 cm transverse skin incision is centered between the anterior borders of sternomastoid muscles 1–2 cm above the sternoclavicular junctions and carried through the platysma and the small superficial blood vessels are cauterized by diathermy or even ligated after clamping as in cases of the superior vena caval syndrome. After the para-tracheal fascia opening and finger blunt dissection along the trachea, the mediastinoscope was inserted. The mediastinoscope was then

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