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Comparison of Real-Time Virtual and Fiberoptic Bronchoscopy in Diagnosis of Bronchogenic Carcinoma

Thesis

submitted for partial fulfillment of MD. *degree In Radiodiagnosis*

By

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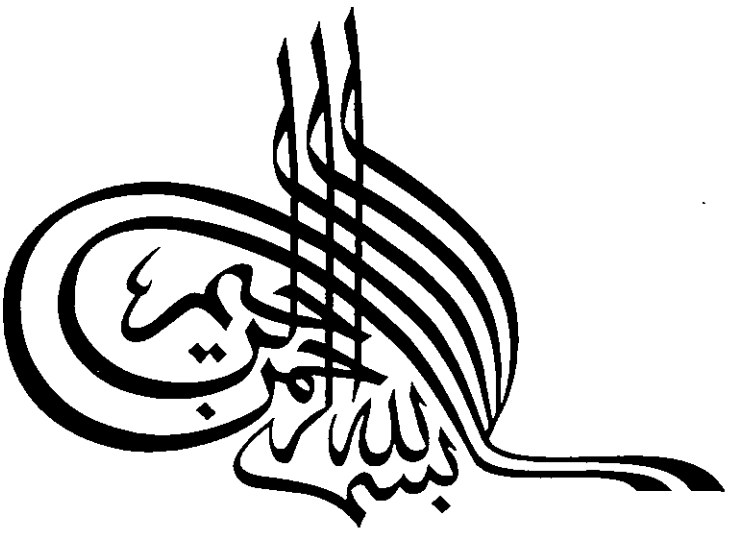
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ABSTRACT

Virtual endoscopy is one of the most recent innovations in the spectrum of post processing techniques. Virtual bronchoscopy is a type of three dimensional reconstruction in which the observation point is placed within the airways to produce an endoscopic like display without the use of endoscope. Seventy three patients with suspected central pulmonary tumors were examined in the radiology department, Manial specialized hospital, Cairo University between October 1999 and September 2001. The patients were subjected to both virtual and fiberoptic bronchoscopy. Virtual studies were calculated and reconstructed from cross sectional images obtained from spiral CT examination of the chest, on a separate work station using a special soft ware. In all patients histopathological diagnosis was obtained either by biopsy or after surgery. A follow up study was performed in 10 patients. The study also included 10 normal subjects to orient oneself with the anatomy to facilitate picking up any the pathological lesions.

Fifty cases out of the 73 were pathologically proved as bronchogenic carcinoma. An excellent overview of the trachea and bronchi up to the 4^{th} and 5^{th} order was obtained in all cases and the results of the virtual bronchoscopy and fiberoptic bronchoscopy concerning the signs of tumor infiltration including, endobronchial mass, stenosis, obstruction and external indentations were comparable. Although fiberoptic bronchoscopy has the advantage of providing direct cues to colour, vascularity and motility and can detect early tumor infiltration by picking up subtle mucosal changes, virtual bronchoscopy is considered superior in by passing any obstruction thus providing an excellent view distal to an obstructing lesion or stenotic segment which can't be traversed endoscopically. Also, it provided all information surrounding the tracheobronchial tree being reviewed in combination with the cross sectional images thus filling in any diagnostic gaps. The combination of virtual bronchoscopy with the axial CT images had upstaged 19 (38%) of our patients with bronchogenic carcinoma, and hence changed their strategy of treatment. This novel approach can provide information on the position of endotracheal or endobronchial lesions especially when axial CT cuts were negative for parenchymal masses so it is recommended in cases of lung collapse, before proceeding to flexible fiberoptic bronchoscopy. VB can be used in preoperative planning and procedure guidance before palliative stent placement in an airway constricted by a tumor or a scar as well as other interventional procedures including laser photocoagulation and brachy-therapy. VB will never be able to supplant true endoscopy, especially in evaluation of the airway mucosa or if biopsy is needed for the diagnosis, but VB is likely to prove a valuable auxillary tool in directing and improving patient care.

Key Words: Virtual Bronchoscopy, Tracheobronchial Tree, Bronchogenic Carcinoma

جامعة القاهرة / كلية الطب
القصر العيني

محضر
أجتماع لجنة الحكم على الرسالة المقدمة من
الطبيبة/ نجلاء محمد عبد الرازق الحوفي
توطئة للحصول على درجة ~~الماجستير~~ / الدكتوراة
في الأمراض الصدرية

تحت عنوان : باللغة الانجليزية : Comparison of Real time Virtual and Fiberoptic bronchoscopy in diagnosis of Bronchogenic Carcinoma

: باللغة العربية : مقارنة المنظار التقديري للقصبة الهوائية باستخدام الاشعة المقطعية بالمنظار الشعبي الليفي الضوئي في دراسة حالات سرطان الرئة

بناء على موافقة الجامعة بتاريخ ٢٤ / ١٢ / ٢٠٠١ تم تشكيل لجنة الفحص والمناقشة للرسالة المذكورة أعلاه على النحو التالي :

١) أ.د/ يحيى أحمد علي أستاذ الأمراض الصدرية القصر العيني
٢) أ.د/ عبد الحكيم محمد أستاذ ورئيس قسم الأشعة القصر العيني عن المشرفين
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وبعد فحص الرسالة بواسطة كل عضو منفردا وكتابة تقارير منفردة لكل منهم إنعقدت اللجنة مجتمعة في يوم الأحد بتاريخ / / ١٩ بقسم الأمراض الصدرية قاعة المؤتمرات بكلية الطب ــ جامعة القاهرة وذلك لمناقشة الطالب في جلسة علنية في موضوع الرسالة والنتائج التي توصل اليها وكذلك الأسس العلمية التي قام عليها البحث .

قرار اللجنة : قام الباحث بعمل دراسة مقارنة بين المنظار التقديري للقصبة الهوائية باستخدام الاشعة المقطعية ثلاثية الابعاد للحصول على صورة من الداخل والمنظار الحقيقي في حالات سرطان الرئة في ٢٣ حالة تشخيص بالتحليل الباثولوجي بوجود سرطان الرئة من ... وقام الباحث بدراسة لوصف التشريحي للقصبة والشعب الهوائية في ١٢ اشخاص غير مصابين وقررت اللجنة بالاجماع على قبول الرسالة

توقيعات أعضاء اللجنة :

المشرف الممتحن (...)
الممتحن الداخلي
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