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Overview

Assessment and Optimisation of Lung Cancer Patients for Treatment with Curative Intent

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Abstract

Over the past decade the field of lung cancer management has seen many developments. Coupled with an ageing population and increasing rates of comorbid illness, the work-up for treatments with curative intent has become more complex and detailed. As well as improvements in imaging and staging techniques, developments in both surgery and radiotherapy may now allow patients who would previously have been considered unfit or not appropriate for treatment with curative intent to undergo radical therapies. This overview will highlight published studies relating to investigation and staging techniques, together with assessments of fitness, with the aim of helping clinicians to determine the most appropriate treatments for each patient. We also highlight areas where further research may be required.

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Key words: Chemotherapy; fitness for surgery; lung cancer; lung function; radiotherapy; staging

Statement of Search Strategies Used and Sources of Information

The terms ‘surgical staging’, ‘pulmonary function testing’, ‘mediastinal staging’, ‘performance status’, ‘cardiovascular risk score’, ‘fitness for surgery’, ‘thoracoscore’, ‘smoking cessation’ and ‘pulmonary rehabilitation’ were used to search PubMed and all relevant studies relating to lung cancer were included in the preparation of this overview.

Introduction

It is well established that surgical resection offers patients the best chance of long-term cure in early stage lung cancer [1]. Over the past decade there has been a successful drive to increase the number of patients undergoing

resection, with the greatest increase in resection rates being noted in older age groups [2–5]. The advent of video assisted thoracoscopic surgery (VATS) is further improving access for some who previously would not have been deemed suitable for surgical resection [6,7]. In addition to surgery, increasing numbers of patients who may not be eligible for surgical resection on the grounds of fitness or disease extent are being offered radical radiotherapy or chemoradiotherapy with potential curative intent. Although further work is required, stereotactic ablative radiotherapy (SABR) may offer similar benefits to surgical resection in very early stage disease where the disease is localised to a small primary lesion [8,9].

As our population ages, the median age of those presenting with lung cancer is increasing and many coming forward for treatment have significant comorbidities. It is therefore imperative that we develop systems to ensure accurate assessments of physical health, including cardio-pulmonary reserve, alongside clear diagnostic and staging algorithms that allow as many patients as possible to be treated with curative intent [4].

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Here we outline the current evidence and guidelines available to assist with the assessment and optimisation of lung cancer patients for treatment with curative intent.

Although assessments for fitness and staging should be undertaken in parallel, for clarity we will address these issues separately. A holistic approach should be undertaken with an *early* assessment of fitness and performance status as this will begin to inform which treatment modalities may be possible for a given individual and depending upon disease extent, this will influence the most appropriate investigations (Figure 1).

Diagnostic and Staging Investigations – Imaging

Accurate staging is essential for identifying the best treatment for each patient, leading to optimal treatment outcomes. Over the last 15 years there has been a significant change in the approach to lung cancer staging, with improvements in cross-sectional and functional imaging and a move away from surgical staging techniques towards minimally invasive approaches such as endobronchial ultrasound (EBUS) and endoscopic ultrasound (EUS).

Chest Radiograph

Although most patients who present to a lung cancer service will have had a chest radiograph, the sensitivity and specificity of chest radiography for detecting lung cancer is low. Approximately one quarter of patients with lung cancer have a 'normal' chest radiograph at presentation [10,11]. In the presence of 'red flag symptoms', such as chronic cough, weight loss or haemoptysis, computed tomography is advised [10].

Computed Tomography

Modern multidetector computed tomography allows images of the entire chest to be acquired in a single breath hold. The standard staging scan should be an intravenous contrast-enhanced, volumetric thin slice (≤ 1 mm) computed tomography that includes the chest and abdomen at least. Some units also advocate the extension of this imaging field to include the pelvis to aid assessment for bone metastases. Post-processing techniques allow multi-planar reconstructions in coronal and sagittal planes, which are often useful for planning surgical or radiotherapy treatments.

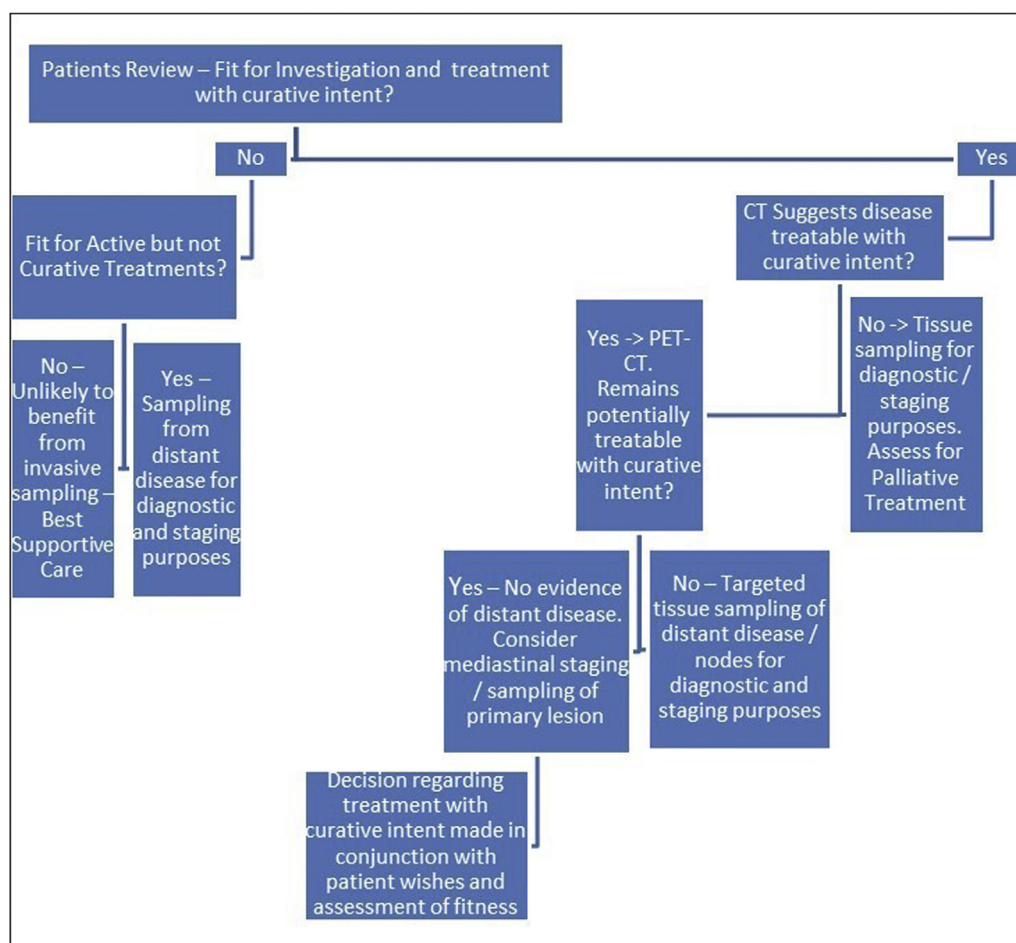


Fig 1. Overview of investigation pathway for patients under consideration for treatment with curative intent.

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