

Are current algorithms for treatment of stage IIIa (N2) lung cancer optimal?

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Study Objectives & Hypotheses

- Characterize the population of patients treated for Stage IIIA, N2 NSCLC at TOH and their disease
- Determine optimal treatment strategies for this patient population
- Identify sub-groups of patients who may benefit from different treatment strategies
- Clarify the optimal treatment strategy for management of Stage IIIA, N2 NSCLC
- It is expected that this population will be amenable to classification by nodal involvement and that patients with surgically resectable disease will benefit from neo-adjuvant and/or adjuvant therapy

Introduction

- Stage IIIA, N2 NSCLC represents a heterogenous patient population, with respect to both tumour burden and lymphadenopathy
- N2 involvement ranges from incidentally found to bulky, multistation disease
- Incidentally found disease clearly benefits from adjuvant treatment compared to surgery alone
- Disease that is technically unresectable is treated with definitive chemoradiation, with no survival benefit seen from incomplete resection
- Controversy exists where N2 disease is evident clinically and potentially resectable
- Recent studies favour multimodality treatment, combining surgery with neo-adjuvant and/or adjuvant chemoradiation
- Results for a subset with pathologically confirmed disease will be discussed here

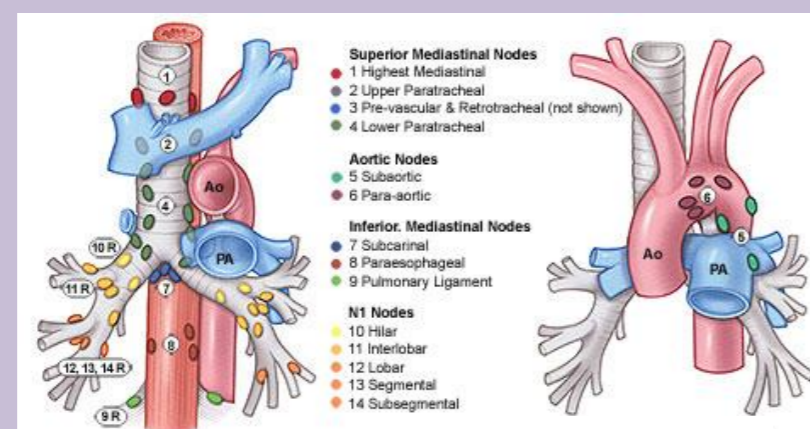


Fig 1. Lymph node stations in NSCLC. N2 disease includes stations 3, 5-9 and ipsilateral nodes of stations 2 & 4.

Methods

- Approval for use of patient information was obtained from the Ottawa Health Science Network Research Ethics Board
- A request was submitted to Health Records at the Ottawa Hospital to obtain a list of patients treated for stage IIIA, N2 NSCLC at TOH from 2004-2014, as well as some supplemental information
- Health Records pulls information from TOH's various operational information systems
- Records from the Ottawa Hospital Cancer Centre were used to identify patients of the correct stage
- 866 patients were returned, of which 579 had stage IIIA disease and 61 had pathologically confirmed stage IIIA, N2 disease
- The resultant database was supplemented with information from patient charts accessed via vOacis
- Initial analysis was performed for this subset of pathologically confirmed disease
- Subsequent analysis will involve consultation with the Methods Centre at the Ottawa Hospital Research Institute

Results

Disease Characteristics

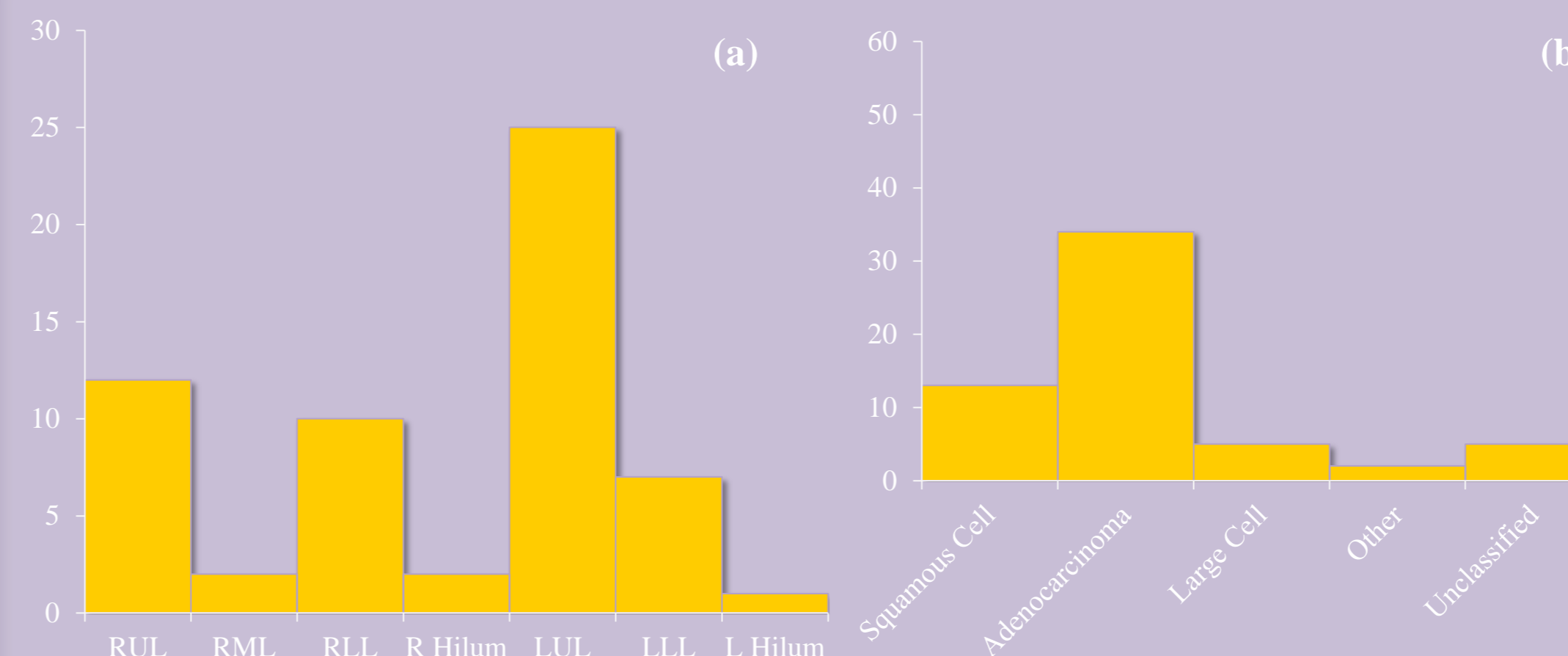
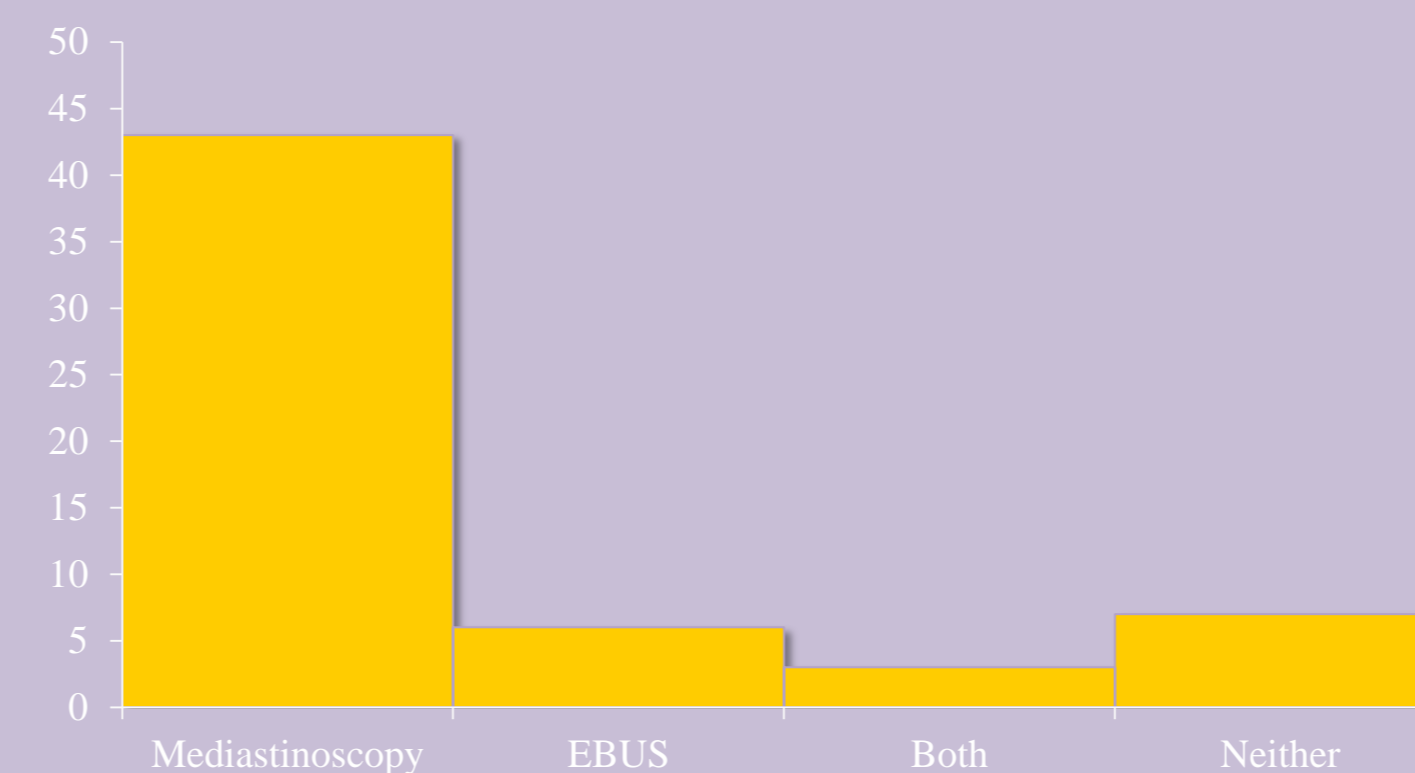


Fig 2. Distribution of location (a) and histology (b) amongst pathologically confirmed stage IIIA, N2 patients.

Staging

Fig 3. Techniques used for nodal sampling. EBUS = endobronchial ultrasound



Treatment

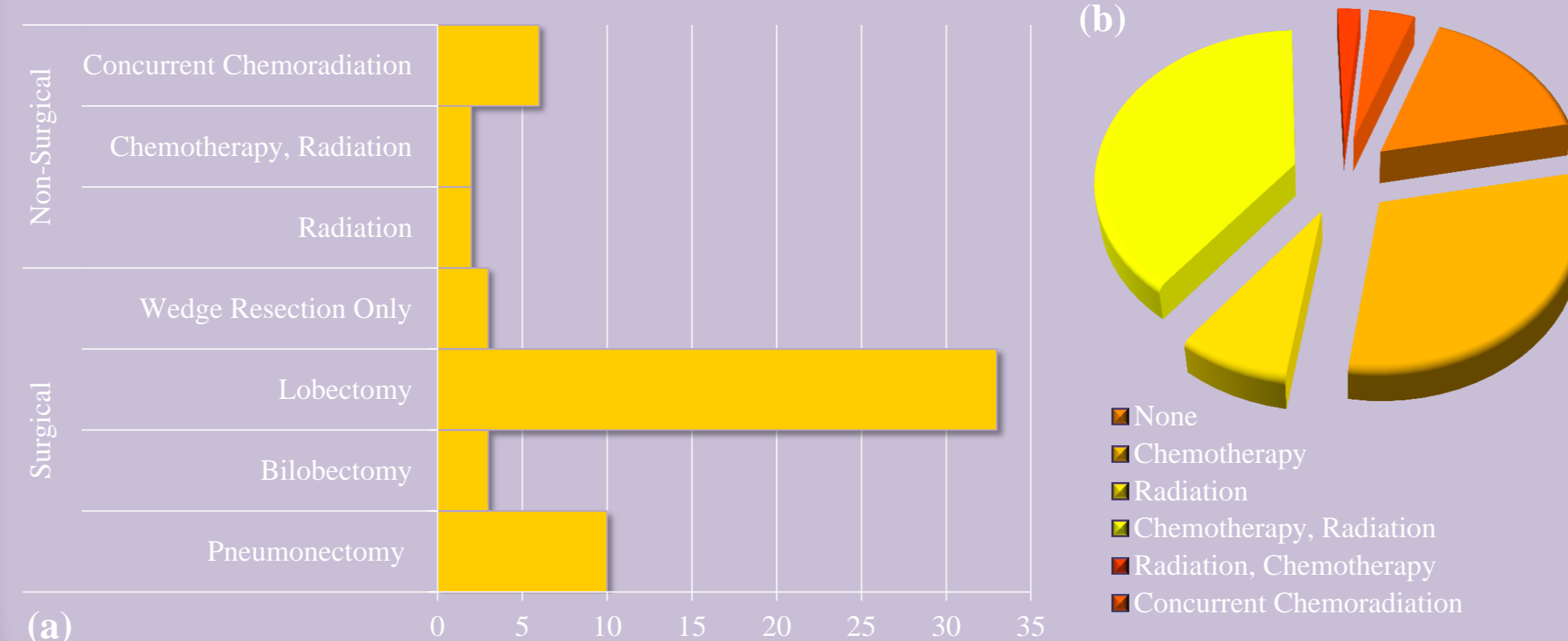


Fig 4. Distribution of treatment modalities amongst pathologically confirmed stage IIIA, N2 patients (a), along with the proportion of surgical patients receiving adjuvant therapy (b). Note that only one patient received neo-adjuvant therapy.

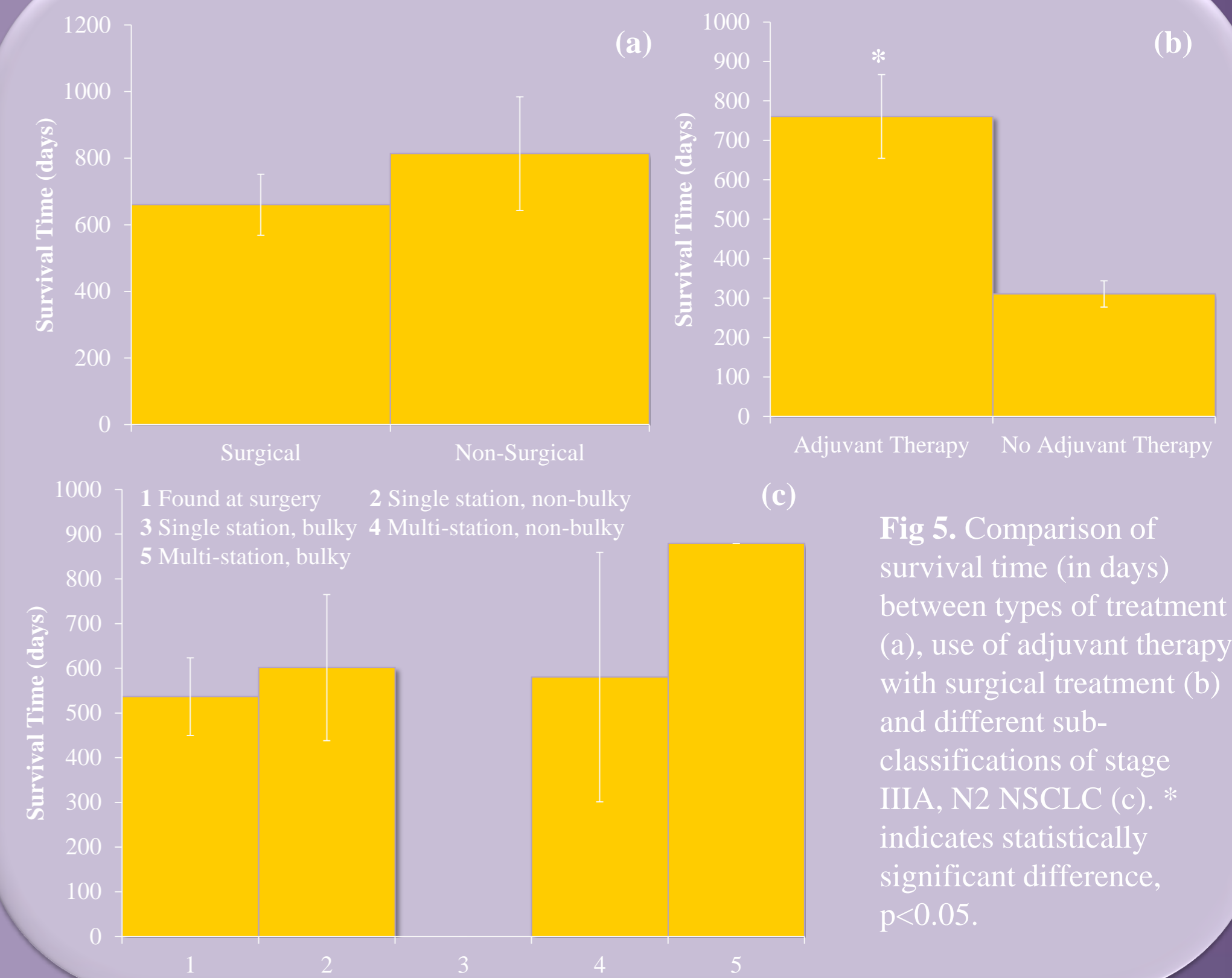


Fig 5. Comparison of survival time (in days) between types of treatment (a), use of adjuvant therapy with surgical treatment (b) and different sub-classifications of stage IIIA, N2 NSCLC (c). * indicates statistically significant difference, $p < 0.05$.

Discussion

- The left upper lobe drains first into the aortopulmonary lymph nodes (stations 5 & 6), which likely explains the prevalence of N2 disease in that location (Fig 2a).
- Adenocarcinoma is known to be the most common subtype in North America (Fig 2b).
- The most common methods of staging and treatment are unsurprising in this sub-population (Fig 3 & 4).
- The survival benefit of adjuvant therapy was expected (Fig 5c). For instance, Lally, *et al.* (2006) showed a 5% increase in 5yr survival with PORT.
- It will be necessary to evaluate whether the survival benefit of adjuvant therapy holds for the larger patient population (Fig 5b).
- The number of non-surgical patients in this sub-group may not have been large enough to show a statistical difference (Fig 5a).
- The sub-classification will likely show more meaningful results in the larger population (Fig 5c).

References

- Lally, BE, et al. (2006) Preoperative radiotherapy for stage II or III non-small-cell lung cancer using the surveillance, epidemiology, and end results database. *J Clin Oncol* 24(19):2998-3006.
- Donington, JS & Pass, HI (2013) Surgical approach to locally advanced non-small cell lung cancer. *Cancer J* 19(3):217-221.
- Lim, E, et al. (2010) Guidelines on the radical management of patients with lung cancer. *Thorax* 65(Suppl III): iii1-iii27.