When to Sample: a Prospective Validation of the Canada Lymph Node Score

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The clinical question

Does the Canada Lymph Node Score (CLNS) accurately predict risk of malignant thoracic nodal involvement when examined in a real-world prospective cohort?

Take Home Message

The CLNS has a high risk of a false negative score. For patients undergoing staging EBUS evaluation for suspected thoracic malignancy, any lymph node with a nodal short axis >5mm should be considered for sampling. The CLNS can be useful in determining which node should be preferentially sampled at a station with multiple targets but should not be used to determine which lymph nodes do not require biopsy.

Background

- The CLNS uses ultrasound features of lymph nodes to predict risk of malignancy
- In a retrospective series of patients from a single site, the CLNS had reasonable performance to help guide which lymph nodes needed biopsy and which negative nodes warranted repeat biopsy
- However, the CLNS has not been prospectively validated across other sites and so its performance in a real-world setting is unclear

Study Design

Study design:
- Single-center, prospective cohort study

Primary outcome:
- CLNS test characteristics (sensitivity, specificity, likelihood ratios)

Secondary Outcome(s):
- Univariate binary logistic regression for each component of CLNS.
- Receiver operating characteristic curve of multivariate model

Intervention:
- No study intervention

Population

Inclusion criteria:
All patients undergoing EBUS guided TBNA at University of Alberta in 2019

Exclusion criteria:
Procedures with incomplete CLNS documentation and non-diagnostic samples

Baseline characteristics:
- N = 387 individual lymph nodes from 181 patients
- 91.7% of nodes were sampled for suspected lung malignancy
- CLNS score prevalence
  - 0: 59 (15.2%)
  - 1: 132 (34.3%)
  - 2: 90 (23.2%)
  - 3: 89 (23.0%)
  - 4: 17 (4.4%)
- Score component prevalence
  - Size >1cm: 222 (57.4%)
  - Necrosis: 40 (10.3%)
  - Absent hilar structure: 166 (42.9%)
  - Well-defined margins: 219 (56.6%)

Outcomes

Primary outcome:

- CLNS ≥ 3
  - Sensitivity 62.2%
  - Specificity 84.4%
  - +LR 4.0
  - -LR 0.4

Secondary outcomes:

- All components were significantly associated with risk of malignancy except for well-defined margins (p= 0.25)
- AUC= 0.76 for ROC curve

Commentary

Strengths:

- Prospective, real-world evaluation of CLNS with multiple proceduralists contributing
- Diverse distribution of lymph node stations sampled

Limitations:

- Single site
- Study is limited to patients in which a diagnostic specimen was obtained
- 20 lymph nodes were initially non-diagnostic and required follow-up mediastinoscopy to obtain diagnosis

Funding

Alberta Innovates Health Solutions

Suggested Reading

1. Hylton DA, Turner S, Kidane B, Spicer J, Xie F, Farrokhyar F, Yasufuku K, Agzarian J, Hanna WC. The Canada Lymph Node Score for prediction of malignancy in mediastinal lymph nodes during endobronchial ultrasound. The Journal of Thoracic and Cardiovascular Surgery. 2020 Jun 1;159(6):2499-507.

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Article citation

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