

右反回神経リンパ節の臨床解剖

—なぜ食道癌は早期に右反回神経リンパ節に転移するのか—

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目 的

右反回神経リンパ節（以下 recR）は古くは最上縦隔リンパ節と呼ばれ、胸部中部食道の早期扁平上皮癌がスキップ転移する部位として知られている。郭清範囲を決めるために、recR 微小転移の術中迅速診断も実用化されている。recR の輸出リンパ管の多くは、他のリンパ節を介することなく右静脈角に注ぎ、右最

上気管支縦隔リンパ本幹と呼ばれる。気管分岐下リンパ節から recR に至る太いリンパ管（右気管傍リンパ節の側副路）は、まれに報告されてきた。しかし、なぜ、胸部中部食道から頻繁にスキップ転移を受けるのか、形態学的な根拠は明らかでない。今回、胸部食道周囲のリンパ管と recR の交通路について解剖学的に検討した。

方 法

45体のホルマリン固定解剖体から気管支縦隔リンパ本幹の明瞭な20体を選び、マクロ的観察の後で輸入路の準連続切片による組織学的検索を行った。また、recR の組織像を他の縦隔リンパ節と比較した。

結 果

食道粘膜下を上行する太いリンパ管が、右気管食道溝において壁外に出て、さらに recR につながる像が、20体中12体で組織学的に観察された。また、recR に接して輸入リンパ管と輸出リンパ管は近接しており、両者を結ぶシャントも観察された。recR の断面では、それより上流側（胸部中部食道側）に位置するあらゆるリンパ節よりも皮質の比率が高く、逆にアンテラはまれであった。

結 論

食道粘膜下を上行するリンパ管を受けやすい位置に recR が位置することが、スキップ転移の大きな原因と考えられた。仮に壁外経路を流れたとしても、右気管傍リンパ節など上流側のリンパ節に定着しなかった癌細胞が、皮質の豊かな recR には転移を形成しやすいのではないかと推測された。しかし、recR 自体のシャントの可能性と recR から静脈角に直達するリン

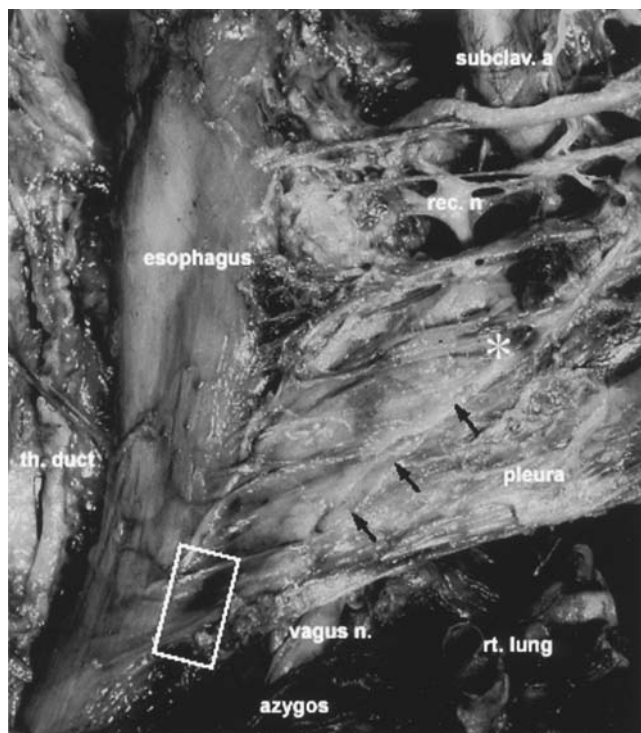


Fig. 1 Dissections of the afferent route to the right recurrent nerve node (recR). Dorsal view. The present dissection reveals a belt-like connective tissue that is likely to contain the afferent vessels (arrows) to the recR (asterisk) and that attaches to the parietal pleura. The recR was separated from the right recurrent laryngeal node during dissection. The belt-like tissue is processed to semiserial sections for histology.

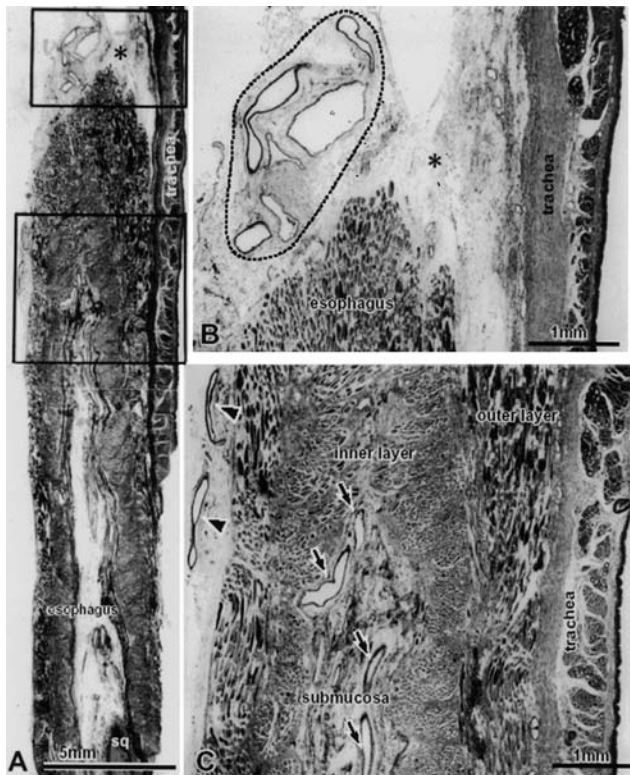


Fig. 2 Esophageal submucosal lymphatic vessels and collecting vessels running along the right tracheo-esophageal groove. Panel A is a transverse section of the trachea and esophagus. The squamous epithelium (sq) is seen in the lowermost part of the figure. Panels B and C are higher magnification views of squares in A (upper square with asterisk, panel B; lower square, panel C). Panel B displays a bundle of collecting lymphatic vessels (enclosed by dotted line) that runs along the tracheo-esophageal groove (asterisk) and goes into the belt-like tissue shown in Fig. 1. Panel C exhibits the communication between the well-developed submucosal lymphatic vessel (arrows) and extramural vessel (arrowheads). The latter drains into the collecting vessels along the groove.

Anatomy of right recurrent nerve node: why does early metastasis of esophageal cancer occur in this node?

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Objective: To investigate the morphological basis of a specific affinity of the right recurrent nerve node (recR) for early and distant metastasis of thoracic esophageal cancer.

Methods: Using 45 donated cadavers, macroscopic and histological observations were performed on the recR and its surrounding lymphatics.

Results: The right paratracheal node consistently communicated with the recR. Other afferent vessels of the recR were often identified in the space between the trachea and esophagus or in a longitudinal connective tissue mass along the right tracheo-esophageal groove. The submucosal vessels often appeared to be well developed in the upper thoracic esophagus and, notably, they drained into the recR afferents lying along the right tracheo-esophageal groove.

Conclusions: From the midthoracic level, metastatic cancer cells seemed to reach the recR via afferent vessels along the right tracheo-esophageal groove as well as via esophageal submucosal vessels. The frequent direct drainage to the venous angle and the collateral of the recR suggested that the recR involvement often corresponds to a systemic disease.

Key words: thoracic esophageal cancer, right recurrent nerve node, lymph node metastasis, right tracheo-esophageal groove

パ路から考えて、recR を完璧なバリアとみなすことは困難であると考えられた。

文献

- 1) Rouvière H: Lymphatics of the larynx, trachea and esophagus. *Anatomy of the Human Lymphatic System*, Edwards Brothers, Ann Arbor, pp54-62, 1938
- 2) Kinoshita I, Ohashi I, Nakagawa K et al: Lymph node metastasis in esophageal cancers with special reference to the upper mediastinum and measures for its treatment. *Jpn J Gastroenterol Surg* **9**: 424-430, 1976
- 3) Akiyama H, Tsurumaru M, Ono Y et al: Background of lymph node dissection for squamous cell carcinoma of the esophagus. *Color Atlas of Surgical Anatomy for Esophageal Cancer*, ed by Sato T and Iizuka T, Springer, Tokyo, pp9-24, 1992
- 4) Matsubara T, Ueba M, Abe T et al: Unique distribution patterns of metastatic lymph nodes in patients with superficial carcinoma of the thoracic esophagus. *Br J Surg* **86**: 669-673, 1999
- 5) Murakami G, Sato T, Takiguchi T: Topographical anatomy of the bronchomediastinal lymph vessels: their relationships and the formation of the collecting trunks. *Arch Histol Cytol* **53**(suppl): 219-235, 1990
- 6) Kuge K, Murakami G, Mizobuchi S et al: Submucosal territory of the direct lymphatic drainage system to the thoracic duct in the human esophagus. *J Thoracic Cardiovasc Surg*; **125**: 1343-1349, 2003
- 7) Murakami G, Taniguchi I: Histological heterogeneity and intranodal shunt flow in lymph nodes from elderly subjects: a cadaveric study. *Ann Surg Oncol* **11**(3 suppl): 279S-284S, 2004