pTNM System in Non Small Cell Lung Carcinoma

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ABSTRAK

Prognosis karsinoma paru berhubungan dengan berbagai macam faktor, antara lain : usia, jenis kelamin, ukuran tumor, *staging*, jenis sel dan derajat diferensiasi, invasi kepembuluh darah, dinding dada, efusi pleura, adanya jaringan ikat, keterlibatan KGB, reaksi radang, *ploidy* DNA dan ekspresi onkogen.

Adanya hubungan langsung antara *staging* klinik dan angka ketahanan hidup sudah dibuktikan, terutama untuk karsinoma bukan sel kecil. *Staging* TNM merupakan parameter prognostik terpenting dan merancang terapi pada karsinoma paru, seperti pada kebanyakan tumor lainnya.

Semua kasus karsinoma paru sebaiknya ditangani oleh tim kanker paru multidisiplin. Jika ditemukan perbedaan bermakna diantara temuan klinik dan radiologik, sebaiknya diagnosis sediaan patologik jaringan paru di*review* ulang , jika memungkinkan oleh ahli patologi kedua yang berpengalaman dalam kanker paru.

Prosedur pemeriksaan imunohistokimia harus dilakukan bila diagnosis histopatologik tidak pasti.

Kata Kunci : pTNM, NSCLC, kanker paru-paru

ABSTRACT

The prognosis of lung carcinoma has been related to a large number of factors, such as : age, sex, location, tumor size, stage, cell type and degree of differentiation, blood vessel invasion, chest wall invasion, pleural effusion, presence of a scar, lymph node involvement, inflammatory reaction, DNA ploidy and oncogene expression.

A direct relationship is evident between clinical stage and survival rates, particularly for non small cell carcinoma (NSCLC). Actually, TNM stage is regarded by most as the single most important prognostic parameter and treatment planning in lung carcinoma, as it is in many other tumors throughout the body.

All lung cancer cases should be reviewed by Lung Cancer multidisciplinary team. If there is a significant discrepancy between the clinical / radiological findings the pathological material from diagnostic lung specimens should be reviewed, if possible by a second pathologist with an interest in lung cancer.

Immunohistochemical procedures must be performed when histopathological diagnostic was uncertain.

***Key Worlds :** pTNM, NSCLC, lung cancer*

INTRODUCTION

Once the TNM status is determined, a clinical stage is assigned. It is on the basis of clinicall stage that operability is assessed and on which considerable prognostic information rests.[1] Individuals having tumour with clinical stage III A or lower tumor may be candidates for resection whereas those with clinical stage III B and IV are not[1]. The role of surgery in stage III A lung carcinoma is controversial and not unanimously advocated.[1]

The staging of cancer is important to :[2]

1. To aid the clinician in the planning of treatment.
2. To give some indication of prognosis.

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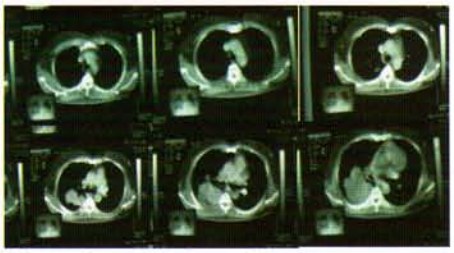
3. To assist in evaluation of the results of treatment.
4. To facilitate the exchange of information between treatment centres.
5. To contribute to the continuing investigation of human cancer.

The clinical stage (cTNM) assignment is based on all information obtained before treatment is very important in making a decision for the most effective treatment. Surgical – pathological staging (pTNM), based on pathological examination of resected specimen, is useful for defer mining the extent of the primary tumor and regional lymph node metastasis. The clinical stage is essential to select and evaluate therapy, and completed with the pathological stage provides the most precise data to estimate prognosis and calculate end results. In multimodality therapy programs, retreatment staging (rTNM evaluation of disease extent following initial or induction therapies) maybe useful for assigning subsequent treatment steps, as well as for evaluating the end results.

CASE REPORT

A 57 year old male came to Persahabatan Hospital with complain of dypsnoe, cough and dysphagia. The chest CT showed clinical stage $T_3N_0M_0$.

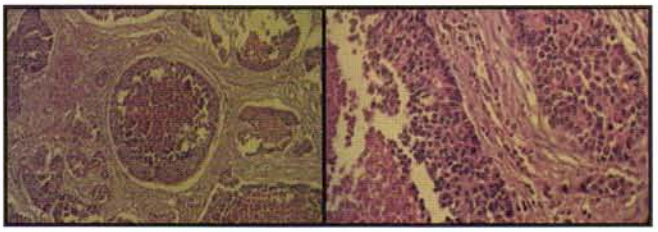
TTNA guided CT was performed from the mass. Cytology confirmed as adenocarcinoma. Surgical staging was $T_4N_2M_0$. Histopatological evaluation of resection specimens was conducted and the result was still in. Differential diagnosis of large cell carcinoma neuroendocrine tumor and adenocarcinoma or mixed tumors. The immunohistochemistry was performed in this tumour and the results was consistent with adenocarcinoma. Lymph node stations number 11 was positive histologically, the pTNM being $T_4N_1M_0$.



Scan CT with clinical stage $T_3N_0M_0$

TTNA guided CT was performed from the mass and concluded as adenocarcinoma

This lobectomy specimen showed the tumour mass replacing an entire lobe with pleural thickening



Histopatological finding showed neuroendocrine features such as ; Rossete – like structures, focal palisading, central necrosis and organoid pattern.

GUIDELINES FOR THE EXAMINATION AND REPORTING OF LUNG CANCER SPECIMENS[3](see appendix)

SUMMARY

The preoperative clinical staging (cTNM) in this case was $T_3N_0M_0$, finding from chest CT. The surgical staging was $T_4N_2M_0$ because the tumour has infiltrated to the pulmonary arteri, node station 7, 9 and 11 were enlarged. This discrepancy maybe caused by time delayed interval during the chests CT to surgical treatment (two months).[5] The pathological staging (pTNM) was $pT_4N_1M_0$, because only node station 11 was histologically positive.[6] The positive lymph node diameter were over 1 cm and the other negative lymph node were less than 1 cm.

Histophatological finding differential diagnosis of the tumour were large cell carcinoma neuroendocrine and adenocarcinoma because the tumour showed varying degrees of neuroendocrine morphologic features by light microscopy including organoid nesting, focal palisading, rossete – like structures and central necrosis.[7] Large cell neuroendocrine carcinoma & combined large cell neuroendcrine carcinoma have a worser prognosis, stage distribution are often stage III – IV at diagnosis.[8,9] Immunohistochemical procedures and referral to the other specialist opinion was value in this case because the rarity type of the tumour and the tumour showed neuroendocrine differentiation. Confirmation of neuroendocrine differentiation is required using immunohistochemical markers such as chromogranin, synaptophysin and NCAM (CD56).[10]

The immunohistochemistry was performed in this tumour and the results was negative for neurone specific enolase and chromogranin but positive for cytokeratine and CEA. The definitive histopathological diagnosis was adenocarcinoma.

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APPENDIX

Guidelines for the examination and reporting of lung cancer specimens[3]

1. **Specimen Types**
   Diagnostic :
   Bronchial biopsy
   Bronchial cytology (brushings, washings, tranbronchial needle aspiration)
   Needle core biopsy
   Transthoracal Needle Aspiration
   VATS biopsy
   Mediastinal biopsy
   Lymph node biopsy
   Pleural biopsy
   Pleural cytology
   Therapeutic :
   Segmentectomy
   Lobectomy
   Sleeve resection
   Pneumonectomy
   Pleurectomy
   Pleuropneumonectomy
2. **Minimum dataset for reporting**[4]
   Diagnostic specimens : tumour type
   Therapeutic resections :
   - Specimen type
   - Specimen dimensions
   - Location of tumour
     - Central (main / segmental bronchus) < 2 cm / ≥2 cm from carina
     - Peripheral (parenchymal / pleural)
   - Tumour size
   - Extent of atelectasis or obstructive pneumonitis
   - Tumour type (WHO International Histological Classification of Tumours)
   - Tumour grade (WHO carcinoma grade system)
   - Local invasion (pleura, chest wall, mediastinal structure, etc)
   - Lymph node spread (by node station group)
   - Resection margins (bronchial, mediastinal, vascular and chest wall)
   - Other relevant pathology
   - pTNM staging system (according to vTNM classification of malignant tumours)

   A direct relationship is evident between clinical stage and survival rates, particarly for non small cell lung carcinoma (NSCLC) but is generally not utilized in small cell lung carcinoma (SCLC). Pathologic staging (pTNM) is based on the pathologic evaluation of sampled tissues according to the TNM system.

3. **Use of ancillary laboratory techniques**
   Immunohistochemical procedures which may be of value include the following :
   - Neuroendocrine differentiation
   - Primary or metastatic carcinoma
   - Adenocarcinoma v mesothelioma
   - Small cell carcinoma v lymphoma

4. **Referral for review or specialist opinion**
   Situation when review is important include when there is a significant discrepancy with the clinical / radiological findings, or when the original pathologist expressed diagnostic uncertainty or when a rare type of tumour is diagnosed.