# Non-small cell lung adenocarcinoma (NSCLC) with lung metastasis and lymphangitis carcinomatosis, stage IV

**Objectives:**

1. Palliative chemotherapy of pulmonary adenocarcinoma with lung metastasis and lymphangitis carcinomatosis
2. Supportive care
3. Pain and oxygen therapy, psychosocial care

## ▶ Evaluation

Non-small cell lung cancer is still one of the forms of cancer where the therapeutic options are very limited. The late diagnosis in stage IIIb and IV, as well as frequently diffuse progression of cancer permit, in most cases, only a palliative treatment approach, which includes chemotherapy and radiotherapy or a combination of both. Several first-line chemotherapies (usually a combination of a platinum-based drug with an additional drug) and second-line chemotherapies (docetaxel or pemetrexed mono) are now a standard.

Recently introduced tyrosine kinase inhibitors (e.g., erlotinib) and monoclonal antibodies (e.g. cetuximab, bevacizumab) have an influence on median survival (currently six months after the diagnosis of stage IV), but have not met the expectations.

These are approved as first-line chemotherapy, but were not used in this particular case. Because of rapid progression of the disease a rapid action is necessary. The typical accompanying symptoms (shortness of breath, weakness, etc.) in the clinical picture complicate the treatment and require intensive care and psycho-oncology support from the family.

For a successful treatment, not only the choice of a therapy and the use of sufficient and intensive concomitant medications is necessary, but also the psychological support, providing information and assistance at home care.

The patient W.M. was treated in accordance with the guidelines after the diagnosis (first-line platinum-based combination, second-Line docetaxel mono). Irradiation would have meant a high logistical effort to the patient and was also rejected because of poor health. Vomiting, nausea, shortness of breath and in the later stages of the disease occurring pain were treated adequately. Only the diet could have been optimized.

W.M. died in March 2008, six months after diagnosis at the age of 66.

## Literature

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Fachinfos der einzelnen Arzneistoffe (www.fachinfo.de)

Kris, M. et al. Leitlinie der American Society of Clinical Oncology zum Einsatz von Antiemetika in der Onkologie, Update-Ausschuss 2006

## Author

Victoria Christine Buballa, Central Pharmacy of the St. Elisabeth Hospital, Central cytostatics production unit, Stadtring Kattenstroth 130, 33332 Gütersloh, submitted in October 2008

## Non-small cell lung adenocarcinoma (NSCLC) with lung metastasis and lymphangitis carcinomatosis, stage IV

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| **Subjective data** | The patient WM, 66 years, male, reported a significant weight loss of about 10 kg in the last two years and a continuous deterioration of the longstanding COPD Stage II. He complained about productive cough and occasional shortness of breath at the hospitalization. According to his statement, he has smoked at least 20-25 cigarettes daily in the last 40 years. Over the differential diagnosis the general condition of the patient worsens significantly. With the beginning of the first cycle of chemotherapy, he reported increased dyspnea and increased whitish sputum, loss of appetite and continuing ongoing weight loss. After diagnosis of stage IV NSCLC a decision for palliative chemotherapy was made. The patient tolerated the therapy well, was reliable and was supported by the family. Despite the continually deteriorating of general condition he kept all scheduled therapy appointments. | |
| **Objective data** | The cause of obstructive lung disease with severe obstruction and emphysema shall be clarified.<br>Chest x-ray images, bronchoscopy and CT-scan have disseminated lung metastases with accompanying lymphangitis carcinomatosis (ED 09/2007). A primary tumor could initially not been differentiated from the in findings described shadows (adoption of a CUP).<br>The hilum lymph nodes are not characteristic, the lymph nodes in the area of the upper abdomen are slightly, but pathologically enlarged and strongly suspicious of metastasis. Liver, kidney and bone metastases are initially excluded.<br>The result of a six-minute walk test was a slight reduction and fatigue during the exposure time. The clarification of the dignity of the lung metastases describes a well-differentiated pulmonary adenocarcinoma (primary tumor), stage IV according to UICC, cT4cN1cM1 (pulmonary), COPD GOLD stage II.<br>The lung metastasis significantly progressed in the two months between diagnosis and the start of chemotherapy. The Karnofsky index was initially set at 90%, but not subsequently re-determined. | |
| **Prescriptions (medication, clinical nutrition, etc. and treatment goals)** | **Prescriptions (medication, clinical nutrition, etc. and treatment goals)** | **Treatment goals** |
| | Fraxiparin 0,3 0-0-1<br>=› Conversion to aspirin 100 mg 1-0-0, ambulatory | because of past deep vein thrombosis in 2006 |
| | Tiotropium 18 µg 1-0-0<br>Salmeterol + Fluticason 2-0-2<br>Prednisolon 5 mg 1-0-0<br>Theophyllin 350 mg 0-0-0-1 | treatment of existing COPD |
| | Simvastatin 20 mg 0-0-1<br>Bisoprolol 2,5 mg 1-0-0<br>Allopurinol 100 mg 1-0-0 | Stabilization and treatment of existing internal medical comorbidities (essential hypertension) |

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| | **Tumor-specific treatment:**<br>a) 10-12/2007:<br>Carboplatin AUC 5 d1<br>Etoposide 120 mg/m2 d1-3<br>Q4w | Palliative first-line chemotherapy until progression, dual combination (PE), cisplatin replaced against carboplatin due to better tolerability |
| | b) Docetaxel 75mg/m2 Q3w | Changing the protocol to second-line chemotherapy, because pulmonary consolidation occurred in the course of the three treatment cycles of PE medial in the right lung (upper-middle). In addition, diffuse bone metastasis were established. |
| | c) Long-term oxygen therapy with a flow of › 2 l / min (later increased to 4 L / min under load) | Increasing dyspnea symptoms under stress due to the already at rest existing partial respiratory insufficiency. |
| | d) Moxifloxacin 400mg 1-0-0 | Due to a slightly elevated inflammation levels and numerous inflammatory infiltrates, evidence of Klebsellia pneumoniae in sputum. |
| | e) Saccharomyces bourladii 1-1-1 | to maintain or improve the intestinal flora and increase of appetite |
| | f) psychotropic drugs (tetrazepam 0-0-1, 0-0-1 mirtazapine 15 mg, then 0.5 mg lorazepam 1-1-1 and citalopram 10 mg 0-0-1) and psycho-oncology care | Mental stabilization of terrified and depressed patient (due to significant deterioration in general condition and shortness of breath). |
| | g) metamizole 500 mg 1-1-1-1<br>morphine sulfate 10 mg retard 1-0-0, 1-1-1 later<br>Calcium 600 mg + Cholecalciferol 400 IU<br>Pamidronate 90 mg Q4w | Pain (bone metastases and severe pain at coughing in the shoulders and back area, suspected pathological vertebral compression (6+7) |
| | h) pantoprazole 40 mg 1-0-0 | |
| | i) Rollator | To improve mobility in the home care |
| | j) 0.9% NaCl 2000 ml daily | Compensation for the dehydration with incipient renal insufficiency |

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| Analysis and Plan | Analysis and Evaluation | Plan |
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| | The late diagnosis of pulmonary adenocarcinoma excessively limits the therapeutic possibilities. The stages III b and IV are known as nearly inoperable, diffuse metastases complicate the diagnosis. The therapy is given for palliative reasons. | The focus of the therapy is possible life-extending and improving of the quality of life. |
| | The chosen first-line chemotherapy PE follows the guidelines (First-line therapy is a combination of a platinum based drug (here carboplatin) with another anticancer drug). Platinum based drug/Etoposide belongs to older combination chemotherapy protocols, but is still used. There was no response to the chemotherapy, the general condition deteriorates continuously. | |
| | The second-line chemotherapy docetaxel 75 mg/m2 mono-therapy meets the standards. The general condition of patient also remained the same. Hereby it's not possible to assess in how far the treatment conducted to prolonged life or improvement of quality of life. | If the patient doesn't response to the treatment, the therapy has to be switched to a second-line regimen. |
| | Both chemotherapy regimens were well tolerated. There were no complications. The toxicity was low. A dose adjustment was not necessary, despite the continuously steadily deteriorating of general condition. | |
| | The shortness of breath, which is typical for progression of the disease, can cause extreme mental mental stress, not only for the patient, but also for family members. The psycho-oncology care and treatment of shortness of breath with a portable oxygen device plays for the patient an extremely important role. Home care means a heavy burden for all concerned, but it is preferred that patient stays at home. | Mobile oxygen equipment makes home care possible for a longer period. Thus, the desire of patients to stay at home can be considered. A social service takes over the organization of the necessary care. The psycho-oncology care is of great value, particularly in relation to the preparation of patient for the course of disease. |
| | The median survival of stage IV adenocarcinoma is 6 months. This was achieved in the patient (FD 09/2007, 03/2008 death => Survival 6 months after initial diagnosis). | |

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| **Antiemetic treatment** | CE regimen: Moderate emetogenic potential (30-90%)<br>Docetaxel mono: low emetogenic potential (10%)<br>The antiemetic prophylaxis was carried out according to the ASCO guidelines 2006. Carboplatin belongs to the moderate (30-90%) emetogenic agents, etoposide and docetaxel to the low emetogenic (10-30%) drugs. At the first-line chemotherapy, carboplatin/etoposide, the use of a dual combination of 5-HT3 antagonist and glucocorticoid is required. For monotherapy with docetaxel is administration of one glucocorticoid sufficient. | The antiemetic therapy, implemented as indicated in the treatment plan<br><br>PE scheme: dual combination (5-HT3 antagonist and glucocorticoid)<br><br>Docetaxel mono: only one glucocorticoid |
| **Treatment of pain** | The treatment of pain starts with metamizole 500 mg 1-1-1-1, later addition of oral retard morphine sulfate.<br>The treatment was adjusted several times, also due to the additionally occurred bone metastases.<br>The treatment of pain is carried out according to the WHO-step scheme (first peripheral analgesic, in this case with metamizole 500 mg, 4x daily, then also centrally acting analgesic, morphine retard). | A change to a fentanyl-containing TTS was offered to the patient, but he refused. The final dose of morphine is not known, unfortunately. Concomitant administration of lactulose to prevent constipation was not prescribed. If it was administered routinely on the ward is also not known. |
| **Nutritional status** | The patient claimed about loss of appetite during the treatment, which is also due to the increasing of pain and shortness of breath (mental instability). The final weight of the patient at the last hospital admission, was 49.5 kilograms, well below the desirable standard weight (in 2006: ~70kg: BMI 25.09, at FD in 09/2007: BMI 21.4, in 03/2008 BMI 17.74 (standard› 64 years, m: BMI 24-29)) | An additional feeding with liquid food, possibly later parenterally was not carried out due to rapid disease progression. Since the patient initially was treated ambulatory, this problem was not detected. |
| **Control parameters** | Six-minute walk test<br>Laboratory findings<br>Karnofsky index (initial)<br>Imaging techniques (before any therapy): Chest x-ray, CT | |