

# The pregnancy associated protein glycodelin as a follow-up biomarker in a male non-small cell lung cancer patient



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## ABSTRACT

**Objectives:** Glycodelin is an immunomodulatory protein with high impact during the establishment of pregnancy and implantation of the trophoblast. In recent years, studies have demonstrated that glycodelin is expressed in different tumor entities. Here we show a case report of a male NSCLC patient with a high glycodelin gene (*PAEP*) and protein expression in the tumor and the serum.

**Materials and methods:** The qPCR data, immunohistochemical stainings of glycodelin in the primary tumor and the metastasis as well as the measurements of glycodelin in the serum were connected and analyzed with the clinical and pathological data of the patient.

**Results:** CT scans of the patient revealed temporarily unclear infiltrations of the lung. The primary tumor of this patient highly expressed the glycodelin gene product (*PAEP*) as well as the glycodelin protein. Moreover, glycodelin was secreted into the blood and the concentration correlated with the patient's follow-up.

**Conclusions:** With this case report of a male patient we demonstrate that the pregnancy associated protein glycodelin might be a useful biomarker to monitor disease progression in NSCLC patients.

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## 1. Case report

A 65 years old male patient was referred to our tertiary care center after being diagnosed with an adenocarcinoma of the left upper lobe in a peripheral hospital (Fig. 1A). Further diagnostic workup at our hospital revealed additional infiltrations in the right lung. After synchronous carcinoma was endoscopically and histologically excluded the patient underwent a thoracotomy with resection of the left upper lobe and subsequent lymphadenectomy (Fig. 1B, pT2N0M0, stage IIA, 7th edition).

A follow-up CT-scan of the lung revealed persisting infiltrations in the right upper lobe (Fig. 1C). Metastasis of the already diagnosed adenocarcinoma of the left upper lobe was histologically confirmed after a further bronchoscopy with trans-bronchial

biopsies of the right upper lobe. The interdisciplinary tumor board recommended surgical exploration. The patient underwent thoracotomy and sleeve lobectomy of the right upper lobe as well as atypical resection of segment 4 and lymphadenectomy (Fig. 1D).

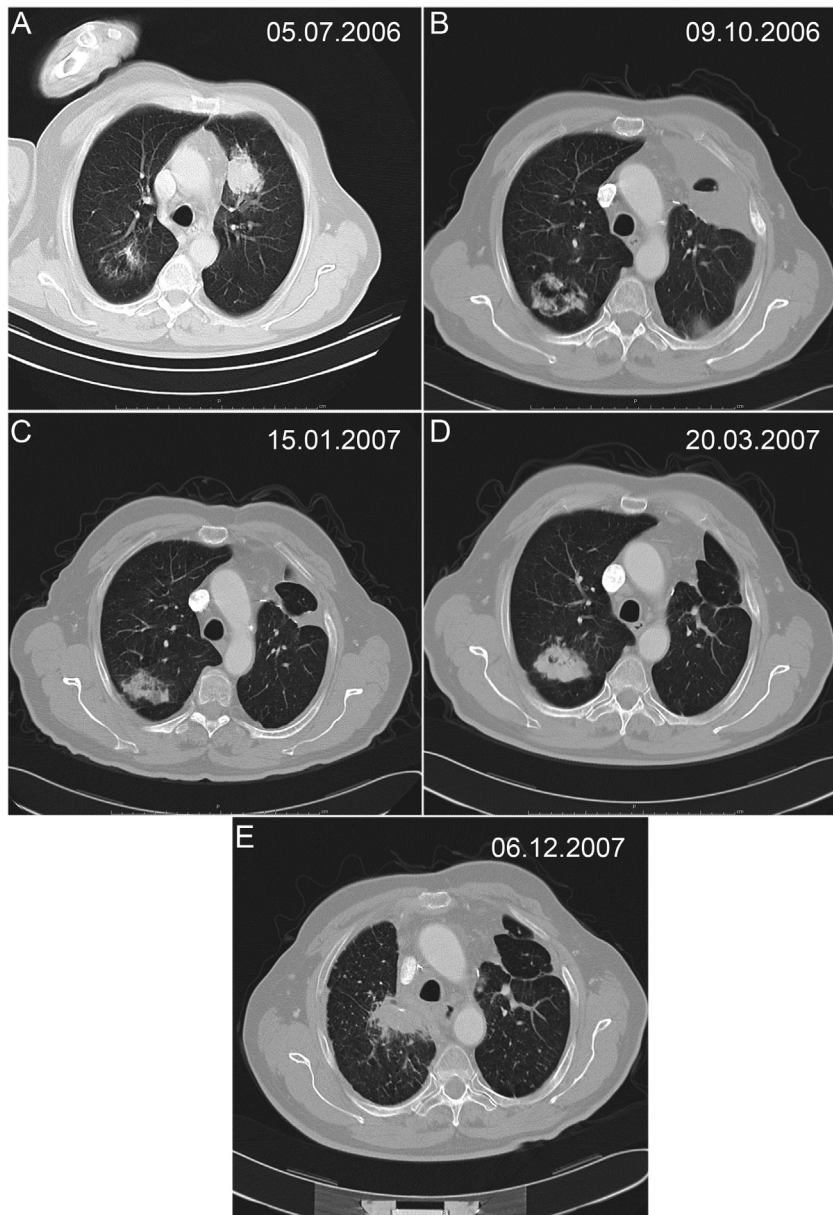
Now diagnosed a stage IV lung carcinoma, the patient was treated with three cycles of chemotherapy (carboplatine/gemcitabine). Chemotherapy had to be interrupted due to side effects (anemia). Second-line therapy (Erlotinib, EGFR status unknown) was initiated after detection of tumor progression in the right lung. The therapy was discontinued due to cutaneous side effects and further tumor progression (Fig. 1E). The patient died 20 months after the initial diagnosis was made.

The glycodelin mRNA (*PAEP*) expression of the tumor of the left upper lobe was investigated by qPCR using specific primers and Universal Probe Library (Roche, Mannheim, Germany). Tumor content was reviewed by an experienced lung pathologist. To validate the correct amplicon, the qPCR product was subsequently sequenced. *PAEP* expression was approximately 14-fold higher than in matched normal lung tissue (Fig. 2A).

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**Fig. 1.** CT scans. Contrast enhanced CT scans show establishing of a metastasis in the left upper lobe (A)–(D) and recurrence or progression disease after anew surgery (E), respectively.

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