

Lung metastasis and pancreatic carcinoma

Christophoros Kotoulas¹,
Panteleimon Tsipas¹,
Eleni Patsea²,
Nikolaos Kentepozidis³

¹Department of Cardiothoracic Surgery;

²Department of Histopathology;

³Department of Oncology;
Iaso General Hospital of Athens

Key words:

- CA 19-9,
- pancreatic adenocarcinoma,
- pulmonary metastasis,
- thorascopic metastasectomy

SUMMARY. The rare case is reported of an isolated pulmonary metastasis presenting 5 years after the curative resection of a pancreatic adenocarcinoma. This case emphasizes the value of the gastrointestinal tumour biomarker CA 19-9 as a sensitive parameter in the detection of pulmonary metastases of pancreatic cancer, and the role of totally thorascopic metastasectomy in their management. *Pneumon 2013, 26(3):270-272.*

INTRODUCTION

The prognosis of locally advanced pancreatic cancer is poor. It is documented that survival is favoured by initial standard oncological surgery and adjuvant therapy such as chemotherapy and radiation therapy.¹

The case is presented of a patient who underwent successful thorascopic resection of a solitary lung mass diagnosed as metastatic adenocarcinoma about 5 years after a Whipple operation for ductal pancreatic adenocarcinoma. At the time of identification of the metastasis the patient was asymptomatic with no evidence of lymph node metastasis, but the serum level of CA 19-9 was elevated. The significance of CA-19 serum levels as a prognostic tool following resection of pancreatic cancer and the technique of thorascopic resection of pulmonary metastases of pancreatic cancer as a safe and standard approach are discussed.

CASE REPORT

The patient was an asymptomatic 77 year-old Caucasian male, who had undergone Whipple operation for pancreatic cancer 5 years earlier. Preoperatively the serum level of CA 19-9 was markedly elevated (478 U/ml, with normal range <37 U/ml).

The postoperative histopathological examination revealed a moderately differentiated ductal pancreatic adenocarcinoma, with no evidence of lymph node invasion. The gross margins of the surgical specimen were disease-free.

During routine follow-up 5 years after surgery, the serum level of CA 19-9 was found to be high (393 U/ml, with normal range <37 U/ml), despite its normalization in the early postoperative period (to 26 U/ml, with normal range <37 U/ml). The PET CT scan (Figure 1) revealed a solitary pulmonary

Correspondence:

Christophoros Kotoulas, PhD, FETCS, FCCP
38 Kifissias Ave., Ambelokipoi
Athens, GR-11526
Tel.: +30 210 7782220
E-mail: info@kotoulas.com
Website: www.kotoulas.com
Greece

mass in the left lower lobe of the lung with substantial uptake (SUV 3.8). It should be noted that because of to the patient's history and the high specificity and sensitivity of the PET CT scan a classic metastatic investigation was not performed.

The patient underwent a thoracoscopic wedge excision of the lesion, with disease-free margins. His postoperative



FIGURE 1. PET-CT scan in 77 year-old male 5 years after curative surgery for pancreatic adenocarcinoma, showing a positive (SUV 3.8) lesion in the left lung.

course was uneventful and he was discharged on the third postoperative day.

Histopathological examination showed an adenomatous lesion 1.3 cm in diameter. Immunohistochemical staining for CA 19-9, CK 7, CA 125, MUC 5A, TTF-1, CK 20 and CDX-2 was consistent with a diagnosis of lung metastasis from pancreatic cancer (Figure 2).

The serum level of CA 19-9 decreased postoperatively, with further decline (to 63 U/ml) following adjuvant gemcitabine hcl - based chemotherapy.

The patient, 12 months after resection of the lung metastasis, is asymptomatic, with no evidence of further disease recurrence.

DISCUSSION

Pancreatic adenocarcinoma is a highly lethal disease, with a median survival of 12.6 months in all patients

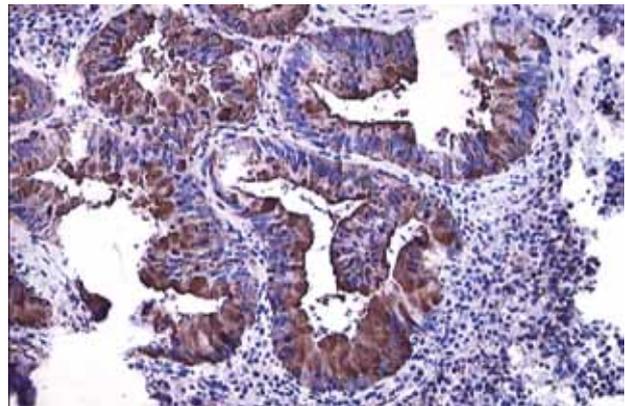


FIGURE 2. Resected lung metastasis (x400): Immunohistochemical stain CA 19-9 showing positivity for pancreatic cancer.

undergoing pancreatic resection.¹ Because of the lack of effective screening methods for this malignancy, the majority of patients present with unresectable disease, while nearly 40% of those with a resectable tumour at diagnosis are not appropriately referred for surgery.¹ The majority of operable patients die from disease recurrence, with a 3-year disease specific survival of only 27%.¹

It should be noted that among long-term survivors after pancreatic resection for adenocarcinoma, the most common site for disease recurrence is the lung.² The case presented here, in which the patient was found to have a lung metastasis about 5 years after his initial Whipple operation for pancreatic cancer, is an example.

The most useful index for diagnosis in this patient was the serum level of CA 19-9, which rises in a number of malignancies, including pancreatic cancer. Although discovered 30 years ago, CA 19-9 remains the gold standard serum marker for patients with pancreatic cancer. While some expert panels recommend measurement of CA 19-9 in the diagnostic work-up of patients with pancreatic cancer (Sturgeon *et al*, unpublished data), its lack of specificity and sensitivity limits its use in this setting.³ One of the most frequent uses of tumour markers is in the postoperative surveillance following curative surgery for a primary cancer⁴, the aim of which is to detect recurrence or metastasis as early as possible. A number of studies have shown that serial determination of CA 19-9 can detect recurrent or metastatic pancreatic cancer several months before clinical or radiological evidence of disease is apparent.⁵ According to the American Society of Clinical Oncology (ASCO) guidelines, CA 19-9 measurement alone cannot provide definite evidence of disease recurrence, and confirmation must be made by

imaging and/or biopsy.⁶ Moreover, in patients who lack the Lewis antigen, a blood type protein on red blood cells, (i.e., about 10% of the Caucasian population) CA19-9 is not expressed, even in those with large tumours. This is due to deficiency of a fucosyltransferase enzyme that is needed to produce both CA19-9 and the Lewis antigen.⁷

The history of this patient and the long disease-free interval led us to the PET CT scan rather than a standard regional work-up, which revealed a solitary pulmonary mass in the left lower lobe with substantial uptake (SUV 3.8).

Given that the primary lesion had been controlled, the lesion was solitary and limited to one lung and with no extrapulmonary metastasis, and the patient could tolerate surgery and pulmonary resection could be performed safely, a totally thoracoscopic wedge resection of the pulmonary metastasis was conducted.⁸ In support of this decision, Arnaoutakis and colleagues reported the first retrospective case control study showing that pulmonary metastasectomy can be performed safely, with low morbidity and mortality, and that the cumulative survival is significantly higher in the group undergoing pulmonary metastasectomy (51 vs. 23 months, $p=0.04$), with a trend towards a higher 2-year survival rate after relapse in the pulmonary metastasectomy group (40% vs. 27%, $p=0.2$).⁹

REFERENCES

1. Mayo SC, Nathan H, Cameron JL, et al. Conditional survival in patients with pancreatic ductal adenocarcinoma resected with curative intent. *Cancer* 2011; 20: doi: 10.1002/cncr.26553.
2. Katz MH, Wang H, Fleming JB, et al. Long-term survival after multidisciplinary management of resected pancreatic adenocarcinoma. *Ann Surg Oncol* 2009;16:836-847.
3. NCCN Clinical Practice Guidelines in Oncology, Pancreatic Adenocarcinoma. V.1. 2008. http://www.nccn.org/professionals/physician_gls/PDF/pancreatic.pdf (10 March 2009, date last accessed).
4. Duffy MJ. Role of tumor markers in patients with solid cancers: a critical review. *Eur J Intern Med* 2007;18:175-184.
5. Duffy MJ. CA 19-9 as a marker for gastrointestinal cancers: a review. *Ann Clin Biochem* 1998;35:364-370.
6. Locker GY, Hamilton S, Harris J. ASCO 2006 update of recommendations for the use of tumor markers in gastrointestinal cancer. *J Clin Oncol* 2006;24:5313-5327.
7. Atkins CD. CA 19-9 and Lewis antigens in pancreatic cancer. *J Clin Oncol* 2009;27:2572-2573.
8. Le Pimpec Barthes F, Fabre-Guillevin E, Foucault C, Cazes A, Dujon A, Riquet M. Lung metastasis surgery, yesterday and now. *Rev Mal Respir* 2011;28:1146-1154.
9. Arnaoutakis GJ, Rangachari D, Laheru DA, et al. Pulmonary resection for isolated pancreatic adenocarcinoma metastasis: an analysis of outcomes and survival. *J Gastrointest Surg* 2011; 15:1611-1617.