Primary signet-ring cell carcinoma of the prostate is infrequent and even more so as secondary spread of this pathologic sub-type to the prostate. We describe the sixth reported case with a diagnosis of a secondary signet-ring cell tumour of the prostate secondary to a gastric cancer. Five years post-gastrectomy to resect signet-ring cell carcinoma, we detected a secondary intra-prostatic spread with urinary tract obstruction. The physical appearance of the tumour cells was similar to that of the previously-resected signet-cell carcinoma of the stomach. There were no metastases in other sites and the patient was treated with radiotherapy. When confronted with intra-prostatic signet-ring cell adenocarcinoma it is necessary to distinguish between primary and secondary aetiology since this would reflect in the choice of treatment and prognosis.

Key words: signet-ring cell tumour, secondary tumour, prostate cancer.


INTRODUCTION

Secondary tumours of the prostate are rare and to present in combination with obstructive symptoms is extremely unusual. Primary signet-ring cell adenocarcinoma of the prostate is, as well, infrequent and, in the current literature, has been reported only 5 times in patients with signet-ring cell carcinoma of the stomach with intra-prostatic metastases that had been diagnosed pre-mortem. We report here a case of intra-prostatic invasion which is symptomatic of this type of tumour.

CASE PRESENTATION

Patient of 60 years of age, ex-smoker (40 packets/year), non-drinker, with pyrosis of several years duration and with no other feature of clinical interest, attended the outpatient clinic complaining of worsening of his dyspepsia, sporadic melena, and with hyporexia with 10 kg weight-loss over the previous 6 months. Blood analysis indicated microcytic anaemia and globular sedimentation rate of 43mm/hour. Chest x-ray (Rx) showed no alterations and in the barium esophageal-gastroduodenal X-ray. Rx there appeared a growth mass in the gastric antrum. Gastroscopy indicated an ulcerative mass in the gastric antrum which was biopsied. Computerised axial tomography (CAT) showed thickening of the stomach walls with a mass in the interior and abundant adenopathies in the gastro-hepatic epiploon. The rest was normal. The anatomo-pathology was of signet-ring cell type adenocarcinoma.

Surgery had been performed on the 7th July 1998. The intra-operative description was of a large mass in the gastric antrum that affected the wall of the transverse meso-colon, and with epiploon gastro-hepatic adenopathies. Total gastrectomy was performed extending to the great epiploon and spleen while extirpating as well, a section of the transverse meso-colon affected by the tumour using a Roux "Y" oesophageo-jejunal reconstruction. The anatomy-pathology was of diffuse adenocarcinoma in ulcerated signet-ring cells of the gastric body infiltrating the whole wall up to the serosa, affecting the mesenteric fat and respecting the horders of the surgical resection. Infiltration was in 5 of 32 lymphatic ganglia resected from the greater curvature and in 0 of 14 from the lesser curvature. The

CASE REPORTS

Secondary signet-ring cell tumour of the prostate derived from a primary gastric malignancy

Manuel Cobo Dolsa, Santiago Muñoz Gallardob, José Peláez Angulao, Rosa Algarra Garcíab, Carlos Fuente Lupiáñezb, Silvia Gil Calleab, Ester Villar Chamorroe, Alvaro Montesa Pinoa, Julia Alcaide García, Inmaculada Ales Díaz, Vanesa Gutiérrez Calderón, Francisco Carabante Ocóna and Manuel Benavides Orgazb

aServicio de Oncología Médica. Hospital Regional Universitario Carlos Haya. Málaga. España.

Correspondence: Manuel Cobo Dols. Secretaría del Servicio de Oncología Médica. Pabellón A, 3.ª planta. Hospital Regional Universitario Carlos Haya. Avda Carlos Haya s/n. 29010 Málaga. España. E-mail: manuel.cobo.sspa@juntadeandalucia.es

Received 13 January 2005; Revised 12 May 2005; Accepted 20 May 2005.
disease stage was defined as stomach adenocarcinoma T4N1M0; resection complete. In August 1998 (one month after surgery) systemic treatment commenced with 6 cycles of adjuvant chemotherapy according to the ECF scheme (epirubicin 50 mg/m²/21 days + cisplatin 60 mg/m²/21 days + 5-fluorouracil 200 mg/m²/daily continuous infusion over 5 months). Chemotherapy toxicities noted were nausea grade 1, diarrhoea grade 2, mucositis grade 2, conjunctivitis grade 1, alopecia grade 2, and neutropenia grade 3 at day +21 following the 4th cycle, and which required a delay of 7 days in the chemotherapy schedule. On conclusion of the scheduled chemotherapy, the patient attended outpatient follow-up every 6 months without evidence of relapse on radiographic and endoscopy evaluation. In December 2003 when he was admitted to the Urology Service with micturation syndrome within the context of discrete de novo renal insufficiency with creatinine of 1.8 mg/dl, and increase in the size of the prostate on abdomino-pelvic CAT scan with bilateral pyelo-caliceal dilatation grade I-II/IV. Rectal examination showed increased prostate size and consistency with irregular surface and with micro-nodules on both lobes, suggestive of carcinoma. The prostate specific antigen (PSA) was 0.84 ng/ml. Prostate ultrasound showed a prostate of 32 × 40 × 22 mm in size. Echo-guided biopsy of the prostate indicated prostate and seminal vesicles with infiltration of the mucino-secretory adenocarcinoma with signet-ring cells of gastric origin. A further biopsy was performed to clarify the possibility of a second primary tumour in the prostate of the signet-ring cell variety but, comparing it with the biopsy taken following the intervention on the stomach tumour, we arrived at the conclusion that we were dealing with the same neoplasia (fig. 1). Immunohistochemistry indicated PSA negativity and positivity for cytokeratine 20 (CK 20). Nuclear magnetic resonance (NMR) of the pelvis (fig. 2) indicated heterogeneous signal of the prostate gland without being able to discriminate between the central zone and the periphery, nor was there the usual hyper-intense signal of the seminal glands. Further, the floor and the vesicle wall were observed to be elevated with bi-urethral dilatation, without invasion of pelvic wall or rectum. Positron emission tomography (PET) was performed (fig. 3) and indicated no other area of uptake in the rest of the body. Hence, intra-prostatic recurrence was considered as the only metastatic site.

Therapeutic option was local conformed tri-dimensional radiotherapy with doses of up to 68 Gy between the 22nd March 2004 and the 10th May 2004. There was no re-evaluation biopsy performed since the radiological evaluations indicated absence of recurrence.

DISCUSSION
Primary carcinoma of the stomach with signet-ring cells is a sub-type of adenocarcinoma characterised by...
the accumulation of intra-cellular mucin that dis-
places and compromises the nucleus; giving the signet
ring appearance. It has been described more frequent-
ly in cancer of the stomach but can, as well, occur in
the colon, pancreas, breast, bladder, prostate and,
really, the lung. In two series of Japanese patients
with approximately 1,500 patients in each and under-
going intervention for cancer of the stomach, 5.4%
were the sub-type of signet-ring cells, with small tu-
mour size and with lower tendency towards ganglion
involvement. These finding are not common in the
series of European patients.
Metastatic signet-ring cell carcinoma can present
diagnostic difficulties, especially when evaluating
cells of the pleural fluid or ascites. Also described have
been metastases of the lymphatic ganglia, colon, lung,
bladder, transverse colon and, much more rarely, of
the prostate, epidermis, urachus, appendix and skin.
To determine the primary origin of the signet-ring cell
carcinoma, the clinical and radiological features need
to be considered although, as with other adenocarci-
nomas of unknown origin, if a primary tumour is not
identified, immunohistochemistry techniques need to
be employed.
Primary signet-ring cell carcinoma of the prostate is a
rare entity that accounts for < 1% of prostate tumours.
A review of 88 cases of mucin-producing primary tu-
mours of the prostate indicated that there were 5 dis-
tinguishable sub-groups: 60 were mucinous carcino-
mas, 17 were pure signet-ring cell carcinoma, and 11
were mucinous carcinoma with signet-ring cells.
The majority of the secondary tumours in the prostate
are caused by direct invasions from other neighbour-
ing organs (bladder or rectum) or associated with in-
filtration from haematological neoplasias (leukaemia
or lymphoma). The intra-prostatic metastases from
other tumours causing obstructive uropathy are very
References
1. Watson CJE, Doyle PT. Gastric carcinoma presenting as
2. Thompson GJ, Albers DD, Broders AC. Unusual carcino-
3. Planke HRB, De la Re PKP, Theunissen P. Secondary sig-
net ring cell tumour of the prostate. Urol Int. 1994;
52:223-4.
4. Lin JT, Yu Ch, Lee JH. Secondary signet-ring cell carci-
5. Kendall A, Corbishley CM, Panihu HS. Signet Ring Cell
Carcinoma in the Prostate. Clinical Oncology. 2004;
16:105-7.
8. Saito S, Hiroyuki I. Mucin-producing carcinoma of the
10. Johnson DE, Chalbanud A, Ayala XG. Secondary tumors of