CASE REPORT

UNUSUALLY HIGH SERUM CA19.9 IN GASTRIC CARCINOMA: A CASE REPORT

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ABSTRACT

We describe a case of poorly differentiated adenocarcinoma of stomach, which did not present typical symptoms of gastrointestinal malignancy on first visit. The patient, a 62 year old smoker presented with shortness of breathe and pain in right lumbar region with no history of fever. Bone scans revealed multiple hot spots in skull, sternum, lumbar vertebrae and both iliac crests. A series of tumor markers were ordered which include PSA, CEA, CA19.9, CA 72.4 and AFP. Serum PSA and AFP concentrations were within normal range. Serum CEA and CA 72.4 were raised significantly. Markedly elevated levels of serum CA19.9 were found (>45000 U/ml) in this patient. CT chest and bronchoscopic examination ruled out the possibility of cancer lung. Upper GI tract endoscopy was done to find out lesion in GI tract. An ulcerative lesion was found in lesser curvature of stomach. Histopathological examination of endoscopic biopsy revealed a poorly differentiated adenocarcinoma of stomach. An unusually high serum CA19.9 (>45000U/ml) in case of gastric carcinoma has not been reported earlier.

KEY WORDS

CA 19.9, CA72.4, CEA, Gastric Carcinoma, Pancreas

CASE REPORT

The prognostic value of preoperative serum levels of various tumor markers of gastrointestinal origin have been evaluated in gastric cancer by Gasper et al (1). According to these investigators, low three-year survival was associated significantly with elevated serum levels of CA72.4, CA19.9 and CEA. Their correlation analysis has shown that CA19.9 was positive in patients with advanced gastric tumors with serosal lymph node and peritoneal involvement. CA72.4 was found positive in patients of advanced tumors with lymph node invasion, liver metastasis and peritoneal involvement. CEA was positive in patients with liver metastasis. Patients with high CA72.4 showed a 4.2 times higher risk of death than

patients with low levels of the marker (1). In another study by Duraker and Celic the evaluation of prognostic value of preoperative serum levels of CA19.9 and CEA in patients with resectable gastric carcinoma was done. According to these investigators a weak correlation was found with CA19.9 positivity and tumor location. No correlation existed between CA19.9 positivity, age, tumor size, histological type, lymph node, hepatic and peritoneal metastasis (2). Wobbs et al (3) have compared the levels of CA19.9 with stages of the gastric cancer. In patients of stage IV gastric carcinoma CA19.9 levels as high as 2300 U/ml have been reported. No positive levels were found in patients with benign gastric disease. CA 19.9 is a marker for both colorectal and pancreatic carcinoma. It is a carbohydrate antigen identified as a glycolipid – sialylated derivative of the Le^a blood group antigen (4). In serum it exists as a mucin, a high molecular mass (200-1000 kd) glycoprotein complex. Patients who are genotypically Le^{a-b-} do not express CA 19.9. Its levels correlate well with pancreatic cancer staging. 80% of patients with pancreatic carcinoma, 67% of hepatobiliary, 40-50% of gastric carcinoma patients show high CA 19.9 (>37U/L). Raised levels of this marker in gastric carcinoma has also been reported by various investigators

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(3,5,6). Yamao et al (7) have shown elevation of CA 19.9 levels in 26 patients of gastric carcinoma with mean value of 163 U/mL range being (53.8-873.5). Muretto et al have found CA 19.9 concentrations as high as 545 ± 510 ng/mL in gastric juices of patients with gastric cancer (8). Ishikawa et al have reported presurgical levels of CA19.9 as 379.7 U/mL in a patient having early gastric cancer (9). No report is available in literature showing serum concentration of CA19.9 as high as 45000 U/mL in a patient of gastric carcinoma. We present a case of 62-year-old smoker with chronic obstructive asthmatic disease (COAD) presented with shortness of breath and pain in right lumbar region for 3 days with no history of fever. Routine blood biochemistry and hematological investigations were sent to the laboratory. Liver function tests revealed a marked increase in serum alkaline phosphatase (3170 U/L). The heat inactivation fractionation studies for alkaline phosphatase isoenzymes (10) revealed a major (90 %) fraction of enzyme was coming from bone. Serum calcium and phosphorus levels were within normal range. X rays of skull, sternum and lumbo sacral spine were unremarkable. A bone scan was done due to clinical history of bone pains. Bone scans revealed multiple hot spots in skull, sternum, lumbar vertebrae and both iliac crests.

A series of serum tumor markers which included serum PSA, CEA, CA 19.9, CA 72.4 and AFP were sent to the laboratory to find out the probable primary site of disease. Serum PSA and AFP were 0.33 and 4.33 (reference range 0-5 ng/mL and 0-5.8 U/mL respectively). Serum CA19.9 was 45,290 U/mL (reference range 0-37), CEA was 925 ng/mL (reference range 0-3.4) and CA 72.4 was 265 U/mL (reference range 0-6.4). CT chest and bronchoscopy were performed in view of patient having chronic obstructive asthmatic disease, bony metastasis and high serum CEA, to find out probable primary in lungs. CT chest did not show any evidence of malignancy. Thick tenacious pus was aspirated bronchoscopically. Cytological examination of bronchoscopically aspirated lavage (BAL) showed few acute inflammatory cells with no evidence of malignancy.

In view of high GI tract markers, ultrasound and CT abdomen were done to find out primary lesion in GI tract. Ultrasound reports revealed mild hepatomegaly. CT abdomen showed normal pancreas. Multiple skeletal metastatic deposits were found in CT abdomen. No lymph node enlargement was seen. Upper GI endoscopy was done. Ulcerative lesion of around 3 cms diameter was seen in lesser curvature of stomach. The lesion was biopsied and sent for histopathological examination. On gross examination the submitted specimen was found as multiple greyish white soft tissue pieces

measuring altogether 0.7 x 0.5 x 0.3 cms. Microscopic examination of paraffin embedded and H and E stained tissue revealed a poorly differentiated adenocarcinoma with predominant pattern being solid sheets of undifferentiated cells. As this was an endoscopic biopsy involving mucosa only, no comment was possible on the status of muscle invasion.

Patient was put on chemotherapy. Serum tumor markers and CT abdomen was repeated after two months of chemotherapy. Serum CEA was further increased (>1000 ng / mL). No significant change was found in CA72.4 concentration however, serum CA19.9 was reduced to one half of pretherapeutic levels (21,053 U/mL). CT abdomen did not reveal any abnormality in pancreas however, liver was enlarged. Bony metastasis was found. Radiologically this patient was in stage IV of the disease. Endoscopy could not be repeated post therapeutically due to deteriorating condition of the patient. Patient survived only for 6 months after the diagnosis of disease.

Although CA 19.9 was developed from colorectal cell line (11), it is believed to be a marker for pancreatic cancer primarily, however its correlation with gastric carcinoma has also been established. There are studies available in literature showing its increased concentration in gastric carcinoma (7). In a comparative study of tumor markers in pretreatment sera of patients with gastric carcinoma, CA19.9 was found moderately raised in only 47 % of patients with stage IV disease (3). In another study of the tumor markers in patients with diseases of the digestive system, the authors evaluated the rise in serum CA19.9 concentration in patients of malignant diseases of GI tract. Patients of gastric carcinoma showed the rise in the range of 7,000 – 10,000 U/mL. Patient had metastasis to lung, liver, peritoneum and bones. Increase in serum CA19.9 was reported as more than 10,000 U / mL in patients of pancreatic carcinoma. High values were found in localized as well as disseminated diseases (5). In yet another study evaluating the rise in tumor markers in gastric carcinoma patients, Sumiya et al have reported serum CEA levels between 5 - 496 ng/mL and CA 19.9 levels of 37-9887 U/mL in 549 patients of gastric carcinoma (12). Dittrich et al have found significantly high levels of CEA in patients with gastric cancer in comparison with patients of noncarcinomatous diseases of the stomach. He found that absolute CEA titer is not a reliable parameter for the prediction of the existence or absence of gastric cancer (6). In our patient the levels of CEA were increasing post chemotherapeutically.

We have reported high levels of CA72.4 in this patient. CA 72.4 is considered to be a marker of gastric carcinoma (9). It

quantifies the antigen TAG 72. Clug et al have reported elevated levels of CA 72.4 in 7 out of 16 patients with gastric carcinoma. No correlation was established between stage of the disease and its serum levels (13). Wobbs et al have found elevated levels of CA72.4 in one third of the patients of gastric carcinoma. The increase was between 230-250 U/ml (3).

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