Taylor & Francis
healthsciences

D-dimer—Can it be a Marker for Malignant Gastric Lesions?

Mehmet Aliustaoglu, Perran F. Yumuk, Mahmut Gumus, Meltem Ekenel, Fusun Bolukbas, Cengiz Bolukbas, Nilgun Mutlu, Gul Basaran, Erol Avsar and Nazim S. Turhal

From the Haydarpasa Numune Hospital, Division of Medical Oncology, Istanbul, (M. Aliustaoglu), Marmara University Hospital, Division of Medical Oncology, Istanbul (P.F. Yumuk, M. Ekenel, G. Basaran, N.S. Turhal), Kartal Research and Training Hospital, Division of Medical Oncology (M. Gumus), Division of Gastroenterology (F. Bolukbas), Istanbul, Haydarpasa Numune Hospital, Division of Gastroenterology, Istanbul (C. Bolukbas), Marmara University Hospital, Department of Biochemistry, (N. Mutlu), Division of Gastroenterology (E. Avsar), Istanbul, Turkey

Correspondence to: P. Fulden Yumuk, Caddebostan, Iskeleyolu C., 6/6 Erenkoy, 81060 Istanbul, Turkey. Tel/fax: (90) (216) 327 5181. E-mail: fuldenyumuk@superonline.com, fuldenyumuk@yahoo.com

Acta Oncologica Vol. 43, No. 8, pp. 770–771, 2004

Received 23 August 2004
Accepted 6 September 2004

To the Editor:

Activation of coagulation and fibrinolysis is frequently associated with malignancy. The spectrum of hemostatic abnormalities ranges from massive thromboembolism to abnormal coagulation parameters in the absence of clinical manifestations. Half of all cancer patients and approximately 90% of cancer patients with metastatic disease have abnormal coagulation parameters, which might be a sign of subclinical activation of the coagulation and fibrinolytic systems (1). D-dimer is a stable end product of fibrin degradation. The extent of activation of coagulation and fibrinolysis has been reported to correlate with tumor stage and prognosis in some malignancies, such as non-small-cell lung cancer, colorectal and breast cancer (2–4). In order to explore the diagnostic value of plasma D-dimer levels in gastric tumors, we studied the D-dimer levels of 68 patients with benign and malignant gastric lesions. All samples were obtained before the biopsies of the primary lesions from patients who did not have any signs or symptoms of intravascular thrombotic events. None of the patients has any history of myocardial infarction during the last 6 months and none had received chemotherapy.

The median age of the patients was 58.5 years (range: 22–87), and 40 patients (59%) were female. Thirty-six patients had malignant (adenocarcinoma) and 32 had benign gastric lesions. Twenty-two patients (61%) with gastric cancer had stage IV disease (14 of these had metastasis), 5 (14%) had stage IIIB, 7 (20%) had IIIA, and 2 (6%) had stage II disease. Plasma D-dimer levels were significantly higher in patients with malignant gastric lesions (5.15 ± 10.46 mcg/ml [range: 0.22–40.75 mcg/ml] for adenocarcinoma vs 0.75 ± 1.09 mcg/ml [range: 0.04–4.72 mcg/ml] for benign lesions, $p < 0.001$). This was also true for patients with stages I to III gastric cancer compared with benign lesions (1.36 ± 1.16 mcg/ml for stages I to III patients vs 0.75 ± 1.09 mcg/ml for benign lesions; $p < 0.001$). The cut-off point of 0.585 mcg/ml was selected as best lower than median D-dimer level for benign lesions.

The group with gastric cancer and the group with benign gastric diseases were used to calculate sensitivity and specificity. The sensitivity at a D-dimer level of 0.585 mcg/ml was 86% (95% confidence interval 71% to 95%). The specificity at this value was 81% (95% confidence interval 64% to 93%). The positive and the negative predictive value were both 84%. There were 29 patients with gastric cancer whose levels were 0.585 mcg/ml, while only 6 patients with benign lesions had levels above this cut-off. The presence of metastasis also correlated significantly with D-dimer levels (10.82 ± 15.35 mcg/ml for metastatic disease vs 1.54 ± 1.13 mcg/ml for patients without metastasis; $p = 0.031$). There was no statistically significant variation when the D-dimer levels were analyzed with respect to tumor stage, tumor location, or age and gender of the patient.

The D-dimer level was statistically very significant in malignant lesions, showing that the D-dimer level might be quite valuable in the diagnosis of malignant gastric tumors. Di Micco et al. studied 11 patients with non-metastatic gastric cancer and 20 healthy controls and reported that plasma D-dimer levels were 20-fold higher in cancer patients (9.57 ± 0.4 ng/dl versus 0.39 ± 0.05 ng/dl, $p < 0.001$) (5). This was also seen in our study. Further, we have shown that higher levels of D-dimer were significantly correlated with metastatic disease when compared with non-metastatic gastric cancer. Although elevated plasma D-dimer levels have reportedly been observed in healthy elderly subjects (3), the correlation between plasma D-dimer levels and age was not seen in our study.

Examination of plasma D-dimer levels might be useful in patients with gastric lesions as a diagnostic marker. Further studies need to be done to determine value and proper usage of D-dimer levels in the diagnosis, prognosis, and follow-up of gastric malignancies.

 ISSN 0284-186X
DOI: 10.1080/02841860410002743

REFERENCES

1. Goad KE, Gralnick HR. Coagulation disorders in cancer. Hematol Oncol Clin North Am 1996; 10: 457–84.
2. Buccheri G, Torchio P, Ferrigno D. Plasma levels of D-dimer in lung carcinoma. Clinical and prognostic significance. Cancer 2003; 97: 3044–52.
3. Oya M, Akiyama Y, Okuyama T, Ishikawa H. High preoperative plasma D-dimer level is associated with advanced tumor stage and short survival after curative resection in patients with colorectal cancer. Jpn J Clin Oncol 2001; 31: 388–94.
4. Blackwell K, Haroon Z, Broadwater G, Berry D, Harris L, Iglehart JD, Dewhirst M, Greenberg C. Plasma D-dimer levels in operable breast cancer patients correlate with clinical stage and axillary lymph node status. J Clin Oncol 2000; 18: 600–8.
5. Di Micco P, Romano M, Niglio A, Nozzolillo P, Federico A, Petronella P, Nunziata L, Di Micco B, Torella R. Alteration of haemostasis in non-metastatic gastric cancer. Dig Liver Dis 2001; 33: 546–50.