Persistence of Increased Amylase and Lipase Concentrations in Acute Pancreatitis

To the Editor:

We question the variations in serum concentrations of lipase and amylase during acute pancreatitis reported by Lott and Lu (1). In the caption for their Figure 3, the authors stated that the graphs of the two enzymes in a patient with acute pancreatitis demonstrated "characteristic changes with time." Serum concentrations of both enzymes peaked on the fourth day after onset and still had not decreased below the upper reference limit after 20 days. In addition, Lott and Lu mentioned in the text that these data were "typical for patients with pancreatitis."

As far as we know, these changes in the concentrations of the two enzymes in serum do not appear to be typical for acute pancreatitis. The values of these two enzymes in serum generally peak within two days after onset, and in most cases amylase values return to normal within one week of onset (2-7). Because the serum concentrations of amylase can return to normal shortly after onset and have poor specificity for diagnosing acute pancreatitis, monitoring the concentrations of pancreatic isoenzymes of amylase and lipase in serum is preferred.

A delay in the time for amylase and lipase to reach their peak values in serum was described for post-traumatic pancreatitis (8), whereas persistence of above-normal concentrations of both enzymes in serum was reported for this condition as well as for complications of acute pancreatitis, e.g., cysts (9). Could the behavior of serum amylase and lipase in the case presented by Lott and Lu be attributed to these conditions or perhaps to the method used to measure their activities (i.e., Kodak Ektachem)?

References

GianVico Melzi d’Eril1 Maurizio Ventrucci2

1 Neurological Inst., IRCCS C. Mondino Foundation Univ. of Pavia via Palestro 3 27100 Pavia, Italy
2 Dept. of Gastroenterol. Univ. of Bologna Bologna, Italy

An author of the paper referred to responds:

To the Editor:

Melzi d'Eril and Ventrucci make an important point with their criticism of our paper. It would have been more accurate if we had said, "in acute severe pancreatitis" for the case described in our Figure 3 (1). By characteristic changes with time, our meaning was that, in patients with acute pancreatitis, amylase and lipase in serum tend to have concentrations change simultaneously rather than discordantly.

In our experience, the time-to-peak value of the commonly assayed pancreatic enzymes is highly variable in patients with pancreatitis. There is really no similarity to, say, the experience with creatine kinase MB isoenzyme in patients with acute myocardial infarction, particularly in those with an "uncomplicated infarct." The time-to-peak value of amylase or lipase is largely coincidental information in patients with pancreatitis. The absolute values of amylase and lipase concentrations in serum certainly depend on the method used; however, the peak times or general trends are, as expected, not related to the method. We illustrated this finding in an earlier report (2).

References

John A. Lott
Ohio State Univ. Med. Center Starling-Loving M-368 Columbus, OH 43210-1240

Measurement of Anti-Folate Analogs

To the Editor:

Methotrexate (N-[4-[(2,4-diamino-6-pteridinyl)methyl]methylamino] benzoyl-L-glutamic acid) is an antifolate in a class of folic acid analogs that has demonstrated effective antineoplastic activity for the treatment of disorders of cell proliferation. Methotrexate (MTX), 10-ethyl-10-deaazaaminopterin (EDAM; Ciba Geigy, Summit, NJ), and trimethotrexate (TMTX; Warner-Lambert/Parke Davis, Ann Arbor, MI) act by intracellularly binding to dihydrofolate reductase (DHFR; EC 1.5.1.3), thereby inhibiting the reduction of dihydrofolate to tetrahydrofolic acid (1-3). These drugs have been shown to be clinically effective in treating many neoplastic disorders such as acute lymphocytic leukemia, carcinomas of the breast, intraocular therapy of urinary bladder tumors, intrathecal administration in brain tumors, and cutaneous neoplasms such as mycosis fungoides (4-6).

Oral or parenteral administration of MTX, EDAM, and TMTX must be carefully monitored because of the risk of dose-limiting toxicity in rapidly proliferating tissue such as bone marrow. Therapeutic blood concentrations must be assiduously and rapidly monitored to prevent neuro- and nephrotoxicity (7,8).

We previously reported the application of centrifugal analysis for MTX determinations and compared this method with the EMT (Syva, Palo Alto, CA) enzyme immunoassay (9). Our current assay method uses the Cobas-Fara analyzer (Roche Diagnostic Systems, Nutley, NJ), permitting rapid and highly sensitive assay of anti-folate analogs, including MTX, EDAM, and TMTX.

Using MTX as the prototypic assay, we established the following assay conditions and reagent mixtures. Reagent mixture A (reagent A on the Cobas-Fara program) contained bovine liver DHFR (Sigma Chemical Co., St. Louis, MO), 4-8 μL, depending on the specific