

# CREATINE KINASE ACTIVITIES IN SERA OF CIRRHOTICS

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Sir,

Creatine Kinase (CK) E.C. 2.7.3.2. is separable into three different isoenzymes by a number of methods.<sup>1-4</sup> Each isoenzyme is a dimer composed of two subunits (Bor M) each having a relative molecular mass of 40,000<sup>1</sup>. These isoenzymes are widely distributed in tissues, CK-MM and CK-MB are found mainly in the skeletal and heart muscles and CK-BB in G.I. tract and the brain with small amounts also found in the kidneys, lungs and the liver<sup>5-6</sup>. In recent years many investigators have discussed diagnostic and clinical significance of CK-iso enzymes in acute myocardial infarction<sup>7</sup>. In the last few years, a number of case reports have appeared that deal with the presence of CK-BB or Macro CK and CK-MB in sera of patients with malignancies thought to be produced by neoplastic cells<sup>8-14</sup>.

These reports stimulated us to study CK-levels in histologically proven cirrhotics to screen for abnormal values of CK if any. We evaluated total CK and CK activities after Immunoinhibition of the M moiety to determine CK-MB or CK-BB values. In a total of thirty cases we found that total CK values were higher than normal controls though within the normal range (Table 1).

**Table I**  
**CK Activities in Cirrhotics.**

	Cirrhotics N=30	Controls N=14
Total CK U/L	114.9 ± 67.4 (40 – 280)	89.9 ± 40.0 (40 – 180)
CK U/L M. Inhibition	56.6 ± 34.4 (12 – 148)	17.7 ± 12.1 (3 – 40)

The activity after inhibition of M fraction show higher values than controls and the difference was significant (  $p < 0.001$  ) (Table 1). The M inhibited CK values in many cirrhotics were similar to controls, however, twelve cases had much higher mean values ( $87.75 \pm 32.3$  U/L with a range 58-148 U/L). Though from these raised values and over technical methods it is difficult to interpret whether the

raised activity in cirrhotics are due to CK-MB or CK-BB or both. The fact that they are raised with no evidence of myocardial injury, raises interesting questions. Are these raised values suggestive or indicative of neoplastic changes not seen histologically? If so can these values be used as prognostic or tumour indicators? Interestingly many of the cases who had raised values after M inhibition had a histological diagnosis of macronodular cirrhosis, a type more often associated with primary liver cancer. These findings are interesting but -would become pertinent when isoenzyme patterns are evaluated in such cases to ascertain if CK-BB or CK-MB or both are raised and if such raised values are found in cases of primary liver cancer.

Total CK and Ck activities after immunohibition of M moiety was evaluated in sera of 30 histologically diagnosed cirrhotics and 14 normal controls. Both activities were determined by optimilised standard methods using 340 rat assay by Boehringer kits. Normal Ck range (24-195).

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