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[Pancreatic Cancer](#)

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**Use of CA 19-9 and CEA to Predict Operability and Survival in Patients With Pancreatic Malignancies**

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**Aim:** Pancreatic cancer is one of the most dreaded malignancies. Most patients are diagnosed at a late disease stage and face a poor prognosis. We evaluated the efficacy of the tumor markers CA 19-9 and carcinoembryonic antigen (CEA) as predictors of operability and survival in patients with pancreatic tumors.

**Methods:** Levels of CA 19-9 and CEA were measured pre-operatively and post-operatively in 49 pancreatic cancer patients. Levels > 2 times above normal were considered elevated. Contrast-enhanced computed tomography (CECT) scan was performed for diagnosis and staging. A senior surgeon determined the operability of each patient. Levels of tumor markers were correlated with the operability and patient survival based on CECT and intra-operative findings.

**Results:** Sixteen of 24 (67%) patients with CA 19-9 levels < 2 times above normal, and 19/24 (79%) patients with CEA < 2 times above normal were found to be operable. In contrast, 22/25 (88%) patients with elevated (> 2 times above normal) CA 19-9 levels ( $P = .0002$ ) and 17/25 (68%) with elevated CEA levels ( $P = .0031$ ) were found to be inoperable. Of the 27 patients considered operable based on CT scan, 5 were deemed inoperable during surgery; all 5 of these patients had elevated CA 19-9 and 4/5 (80%) had elevated CEA levels. Among the inoperable patients, only 5/21 (24%) with elevated CA 19-9 level reported back at the 1-year follow-up, and none with CA 19-9 level >1,000 U/mL reported at the 6-month follow-up. None of the patients who were operable on the basis of pre-operative tumor marker levels showed evidence of increasing tumor marker levels suggestive of recurrence at the end of 1-year follow-up. All

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patients who underwent curative resection achieved normal values of CA 19-9 and CEA post-surgery.

**Conclusion:** Elevated levels of CA 19-9 and CEA (> 2 times above normal value) predicted increased risk of inoperability and poor survival in patients with pancreatic cancer. Patients with CA 19-9 or CEA level > 3 times above normal were more likely to be inoperable even if deemed operable according to CT scan; diagnostic laparoscopy would be beneficial in these patients. CA 19-9 level > 1,000 U/mL indicated a dismal survival in the inoperable group of patients.