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ST VINCENT'S PATHOLOGY

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CARCINO-EMBYONIC ANTIGEN (CEA) INFORMATION SHEET

PHYSIOLOGY

CEA is a family of high molecular weight glycoproteins produced in embryonic tissues of gut, pancreas and liver. It is present in high concentration in various tumours, especially those of the gastro-intestinal tract as well as in small quantities in intestinal tissues of healthy adults. It is strongly expressed during fetal development, but formation is suppressed after birth. It is part of the immunoglobulin gene superfamily and has a half-life in serum about 6 days.

PATHOLOGY

Serum CEA is elevated in patients with in colo-rectal (60-90%), pancreatic (50-80%), gastric (25-50%) and breast (25-50%) cancers. In colorectal cancer the levels correlate with Dukes grading. Due to the benign causes of CEA elevation only levels of 5-10 times the upper limit of normal are strongly suggestive of cancer. Like most other tumour markers, CEA is useful for monitoring disease but not for diagnosis or detection.

CEA may be elevated in patients with cirrhosis, hepatitis, inflammatory bowel disease, chronic lung disease, pancreatitis and pneumonia, with elevations seen in 20-50% of cases. Smoking is a common cause of elevation of CEA where levels up to 10 ug/L may be seen. Levels greater than 10 ug/L are strongly suggestive of malignancy, although these levels are occasionally seen with cirrhosis or ulcerative colitis.

INDICATIONS FOR MEASUREMENT

CEA is neither sensitive nor specific enough for screening of asymptomatic patients. CEA should be measured in patients with tumours of the gastro-intestinal tract for whom active management is planned. CEA may then be measured serially as a monitor of treatment efficacy or relapse. As with other tumour markers the full clinical circumstances must be taken into consideration. It is important to monitor patients with the same assay type as different molecular forms may give varying results in different assays.

REFERENCE INTERVAL

0 - 5 µg/L

MEASUREMENT

Serum (gold top) or heparin (lime top) are the preferred sample types. Results are available within 3 hours of the sample arriving at the laboratory.