Abstract

Interpretation of Common Used Tumor Markers Affected by Systemic and Inflammatory Diseases

Introduction:

An examination of tumor markers is often made as a basis for the successful diagnosis and follow-up treatment of patients with malignant tumors. However, are tumor markers truly significant by themselves, or are they just a baseline quantitative expression of value that we use to diagnose a patient as better or worse based on it increasing or decreasing value?

Objective:

This paper attempts to answer the question of what factors can affect serum protein and mucin markers and thus lead to a misinterpretation of their results.

Methods:

Tumor markers were determined by isotopic and non-isotopic laboratory analysis methods, using operational protocols of the immunoanalytic laboratory. All methods were checked using internal quality control, and four times a year using an external quality control. Additionally, 16 236 samples were analysed using 3180 probands during the period 2008-2014.

Results:

We discovered that in premenopausal women, the markers AFP, CA 125 and HE 4 rise during ovulation peak periods while other markers changed minimally or not at all. However, in postmenopausal women, we proved the incidence of a false positivity marker. With women in the 1st and 2nd trimester of pregnancy, the levels of AFP, CA 125 and HE4 changed while other tumor markers remain unchanged. With smokers CEA levels increase, however the false positive rate is relatively small and only minimally affects the interpretation of the results. In contrast, rectal examination, colonoscopy, bronchoscopy significantly increases the values of tumor markers, so sampling should always precede these tests. Inflammatory disease of viral etiology,

as well as bacterial inflammation mainly increases Chromogranin A and mucin tumor markers. Pleural effusions or ascites leads to an extreme increase in levels of CA 125 without any relation to etiology of effusion. Chronic renal insufficiency leads almost to an extreme increase in tumor markers, while autoimmune diseases of the digestive tract increases CA 125, CA 19-9 and chromogranin A. The extreme increase in serum chromogranin A resulting from treatment using proton pump inhibitors is often misinterpreted as carcinoid syndrome. And similarly, the extreme increasing of CA 125 as result of inflammation in the femal pelvis can also lead to the misinterpretation and suspected diagnosis of ovarian tumors.

Conclusions:

When physicians use the right kind of tumor markers in the right time and frequency, these markers assist significantly in the early detection of cancer or its recurrence, and assists the physician in beginning the diagnostic process for its discovery. Therefore when a patient receives one higher-level tumor marker, they should discuss this result with their doctor, and the doctor should explain to the patient that this information has limited predictive value, especially in the case of a random tumor marker selection. A physicians knowledge of the factors that may influence tumor marker outcome is essential for the optimal display and interpretation of the tumor markers.

KEY WORDS: Tumor Markers, Factors, Proband, False Positive,
Renal Insufficiency, Inflammation, Autoimmune Diseases, Pleural Effusions, Ascites