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## Serum CEA, SOX2 and CA50 RIA detection of lung cancer patients

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### ABSTRACT

Through the serum carcinoembryonic antigen (CEA), stem cell markers (SOX2), carbohydrate antigen 50 (CA50) and other tumor markers (TM) joint inspection methods, explore the correlation between TM and lung cancer, seeking to improve the diagnosis of lung cancer positive rate and the best means of prognosis. Methods: serum collected from 85 cases of lung cancer patients before treatment, after treatment, 6 weeks, 6 months, CEA, SOX2, CA50 was examined by ELISA assays, 25 patients diagnosed with non-lung cancer as control group. Results: CEA, SOX2, CA50 were significantly higher in experimental group than control group, the difference was significant ( $P < 0.01$ ); Postoperative residual and metastatic tendency TM content does not fall significantly; serum CEA + SOX2 + CA50 joint testing positive rates of up to 91.2%, significantly higher than the single seizure ( $P < 0.01$ ). Conclusion: combined serum CEA + SOX2 + CA50 can increase the positive rate of diagnosis of lung cancer; early diagnosis of lung cancer has an important role, especially with a specific value to evaluate the efficacy and postoperative metastasis.

### KEYWORDS

Lung cancer; CEA; CA50; Tumor marker.



## INTRODUCTION

Lung cancer is the high incidence and high mortality, relatively poor treatment of malignant tumors<sup>[1,2]</sup>, and there is no perfect treatment<sup>[3-5]</sup>. Early detection, early diagnosis of lung cancer has an extremely important significance for patients' prognosis<sup>[6]</sup>. Serum CEA, SOX2 and CA50 detection can improve the positive rate of lung cancer diagnosis, to reduce mortality from lung cancer have certain significance. This article used combined CEA+SOX2+CA50 detection of 85 cases of lung cancer patients to improve the diagnosis rate, and focus on the efficacy and prognostic evaluation in order to delay recurrence and improve survival.

## MATERIALS AND METHODS

### General Information

Experimental group 85 cases, male 54 cases, female 31 cases, aged 38-79 years, were hospitalized in our hospital patients in 2010-2012, all cases were treated with X-ray, CT, MRI, bronchoscopy, pathology etc. diagnosed with lung cancer. In 85 lung cancers, there were 45 cases adenocarcinoma, 5 cases squamous cell carcinoma, 8 cases undifferentiated carcinoma, and 7 cases small cell lung cancer. Normal control group were 25 patients, 16 males and 9 females, aged 43-65 years old, are non-clinically diagnosed lung cancer patients.

### Serum samples collected

All patients and normal control group, serum samples collected in fasting venous blood 3ml, separation of serum set - 20°C refrigerator, tested. Groups were observed before treatment, after 6 weeks, 6 months after taking the specimen under the same conditions.

### RIA

CEA, SOX2, CA50 are used chemiluminescence. The kit for the Shanghai Qianchen Biotechnology Limited.

Data were compared with ANOVA and post-box t-test. Significant difference was assigned at the  $p < 0.05$  level.

## RESULT

2.1 Observation of serum CEA, SOX2, CA50 content in experimental group was significantly higher than control group ( $P < 0.01$ ), 85 cases of tumor markers were positive rate of joint inspection, radiographic lung positive rate of 78%, 14% suspicious, negative for 8% respectively, and suspicious and negative cases happened radiographic change in 1-2 months and within 3-5 months (table 1).

TABLE 1 : CEA, SOX2, CA50 levels between control group and the experimental group before surgery

TM	control group (n= 25)	experimental group (n= 85)	t	P
CEA (ng /ml)	3. 46±2. 57	66. 42±13.28	23.50	p<0.01
SOX2 (ng /ml)	6.78±2.46	54.38±11.26	20.93	p<0.01
CA50 (Ku /l)	17. 26±2. 89	26. 83±4. 62	9.80	p<0.01

2.2 85 cases of lung cancer patients, and 67 cases of TM were significantly lower after six weeks TM content completely normal, accounting for 78.8%, 18 cases of TM decline was not significant, accounting for 21.2%, respectively, after 6-12 month recurrence.

2.3 Combined detection of serum CEA+SOX2+CA50-positive rate was higher than the individual. Show individual serum CEA, SOX2, CA50 positive results for the 48 cases, the positive rate

was 56.5%, using combined CEA+SOX2+CA50-positive results for the 78 cases, and the positive rate increased to 91.8%. The results have a statistical significant difference (table 2).

**TABLE 2 : Compare between single indicator assay and combined CEA+SOX2+CA50 assay**

Assay	positive cases	positive rate	$\chi^2$	P
single indicator assay	48	56.5%		
combined indicators assay	78	91.8%	17.21	p<0.01

## DISCUSS

Early detection and diagnosis of cancer is crucial for patient prognosis, find more effective tumor marker has a very important significance<sup>[7]</sup>. CEA, SOX2, CA50 tumor associated antigens are important, CEA is an oncofetal protein, promotes binding to tumor cells and normal cells, and plays an important role in tumor metastasis<sup>[8]</sup>. Recent study demonstrated the important contribution of SOX2 to tumorigenesis and metastasis properties of various types of cancers and strongly supported the concept that SOX2 can be used as an effective marker for diagnosis and predicting prognosis of cancer patients<sup>[9]</sup>. CA50 is also identified a good marker for lung cancer<sup>[10]</sup>. The results showed that CEA, SOX2, CA50 sensitivity of detection of recurrence is extremely high, often early in the clinical, pathological examination and X-ray examination. In the blood of patients with lung cancer CEA, SOX2, CA50 concentration continuous observation, can provide an important basis for judging the condition, prognosis and efficacy. Domestic and foreign research also confirmed that preoperative or pre-treatment TM concentration can clearly indicate the status of the tumor, survival and the presence of indications for surgery and so on. TM preoperative lower concentrations, indicating that the earlier stage of disease, tumor metastasis, recurrence may be smaller, the longer survival time; Conversely, the higher the concentration of preoperative instructions TM late stage of disease, it is difficult resection, the prognosis is poor, which CEA higher sensitivity<sup>[11,12]</sup>.

In this study, about 78.8% of patients in the six weeks to fully recover normal, no recurrence within 1 year after surgery 21.2% of patients still remain abnormal TM, six months after the 18 cases occurred TM increased 6 recurrence 12 months, not surgery TM continued to increase, died within 6-12 months. The results show that the use of the combined serum CEA, Sox2, CA50-positive rate increased to 91.8%, it was significantly higher than the individual tests.

Therefore, we believe that the best early stage lung cancer patients clinically suspected conduct CEA, SOX2, CA50 combined to improve the detection rate, compensate for the lack of a single detection, this research may improve the early diagnosis of lung cancer, early treatment of clinical significance strengthen monitoring concepts postoperative tumor markers in order to assess the prognosis and reduce the relapse rate.

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