

Squamous Cell Carcinoma Antigen

FOR TREATMENT MONITORING IN PATIENTS WITH SQUAMOUS CELL CARCINOMAS

Disease Overview

- Squamous cell carcinoma (SCC) is a malignant cancer of epithelium that shows squamous cell differentiation. It can occur in several tissues, including uterine cervix, oral cavity, esophagus, lung, anal canal, and skin.
- Serum concentrations of SCC antigen are often elevated in patients with SCC.

Epidemiology

- More than 90 percent of the estimated 46,000 annual cases of cancers of the oral cavity and oropharynx (also known as head and neck cancer) are SCC.
- Approximately 85 percent of the estimated 11,000 annual cases of cervical cancer are SCC.
- Approximately 30 percent of the estimated 213,000 annual cases of lung cancer are SCC.

Pathophysiology

- SCC antigen is expressed in normal epithelium and epithelial tissues. It is a glycoprotein with a molecular weight between 45,000 and 55,000 daltons.
- SCC is found in 10 protein fractions with isoelectric points ranging from 5.9 to 6.6.
- While the neutral forms of SCC normally remain inside the cell, acidic SCC antigen is released and often elevated in patients who have squamous cell carcinomas or other nonmalignant squamous cell lesions.
- SCC antigen may be involved in the malignant behavior of squamous cell cancers, functioning in invasion and/or metastasis. Consequently, serum concentrations of SCC antigen can be used to monitor various SCC. Associations between serum SCC antigen concentrations and tumor stage, size, and progression have also been observed.

Indications for Ordering

- SCC antigen is useful for monitoring cancer recurrence following the removal of SCC. The half-life of SCC antigen in serum is 2.2 hours. Concentrations that remain persistently elevated or begin to increase following tumor removal suggest persistent or recurrent disease.
- In cases where SCC antigen levels will be used to monitor progress of patients, testing should be performed prior to surgery.

Methodology

- SCC antigen is measured using analyte-specific reagents in an enzyme-linked immunosorbent assay manufactured by ARUP.

- Human anti-mouse antibody (HAMA) blocking reagents are used to inhibit the potential influence of interfering antibodies that may be present in some serum samples.

Interpretation

- A reference interval study conducted by ARUP using serum samples collected from 136 healthy volunteers (66 males, 70 females) aged 19–75 years identified a SCC antigen concentration of 2.2 ng/mL as the upper 95th percentile.
- A variety of nonmalignant benign diseases of the skin (e.g., eczema, erythrodermic epidermitis, pemphigus, and psoriasis), lungs (e.g., tuberculosis, adult respiratory distress syndrome, sarcoidosis, and the presence of pleural effusion), and other common conditions may result in increased serum concentrations of SCC antigen. Thus, SCC antigen results alone should not be interpreted as evidence of the presence or absence of malignant disease.

Limitations

Because saliva, sweat, and respiratory secretions contain high concentrations of SCC antigen, precautions must be taken to prevent sample contamination. In cases where elevated or increased SCC antigen concentrations are observed, retesting of a new sample is indicated to exclude contamination.

References

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7. Cho WC. Potentially useful biomarkers for the diagnosis, treatment and prognosis of lung cancer. *Biomed Phatmacother* 2007;61(9):515–9.

Test Information

0081054 **Squamous Cell Carcinoma Antigen, Serum**

For specific collection, transport, and testing information, refer to the ARUP website at www.aruplab.com.

For information on test selection, ordering, and interpretation, refer to ARUP Consult® at www.arupconsult.com.