Salivary carbohydrate antigen 19-9 is a poor tumor marker for malignant parotid neoplasms

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ABSTRACT

This prospective study was conducted through the Department of Otolaryngology at the University of Florida and was approved by the Institutional Review Board. Patients who intended to undergo superficial or total parotidectomy for a parotid mass were identified and invited to enroll in this study. Exclusion criteria included age <18 years of age and patients undergoing parotid surgery for reasons other than parotid tumor excision. Written informed consent was obtained and a preoperative questionnaire was provided to assess for possible complicating factors that could affect CA 19-9 levels.

Samples were obtained either at the patient’s preoperative counseling visit or in the preoperative holding area on the day of surgery. Salivation was encouraged with the oral application of five drops of lemon juice followed by water to rinse the mouth. Saliva was collected by applying bilateral polyethylene suction cups to both parotid duct papillae. Parotid massage was intermittently provided approximately every five minutes and collection proceeded until either 1mL saliva was produced on each side or for a maximum of 15 minutes. A serum sample was then collected. All specimens were then stored at -40°C.

The salivary collection device was fashioned by fashioning a 1mL well from the end of a 6mL syringe which is easily placed over the visualized parotid duct papilla (Figure 1). This was connected via flexible intravenous tubing to a 3mL syringe. The 3mL syringe was used to provide suction to the parotid duct and was reaspirated as saliva was collected. This provided an adequate amount of persistent suction to maintain the suction cup in place without collapsing the parotid duct or causing discomfort to the patient.

A separate healthy control group without parotid masses was tested in an identical manner. Samples were tested in duplicate using the CA 19-9 enzyme-linked immunosorbent assay (ELISA) with dilutions performed as appropriate. The reference range for CA 19-9 serum samples was <37 U/mL. For the determination of statistical significance, 2-sided t-tests were performed using the Excel software. Probability values of p < 0.05 were considered statistically significant.

RESULTS

Figure 2 - Box and whisker plot of salivary CA 19-9 levels (U/mL) between benign and malignant tumors and their respective control sides with expansion of plot below 1000 U/mL

Table 1 – Types of benign and malignant tumors

Table 2 – Average values for salivary CA 19-9 levels for tumor and control sides in benign and malignant masses with associated p values. Tumor specific subsets were defined by final pathology. The average salivary CA 19-9 for control subjects was 10 U/mL. Average serum levels of CA 19-9 were 12 U/mL for both benign and malignant parotid tumors. Average serum CA 19-9 was 10 U/mL for the control group.

DISCUSSION

In conclusion, salivary and serum CA 19-9 levels do not consistently correlate with the presence of malignancy. CA 19-9 is not useful as a diagnostic modality for parotid neoplasms and has no demonstrable role in the post-treatment surveillance of parotid gland malignancy.

REFERENCES


CONCLUSIONS

In conclusion, salivary and serum CA 19-9 levels do not consistently correlate with the presence of malignancy. CA 19-9 is not useful as a diagnostic modality for parotid neoplasms and has no demonstrable role in the post-treatment surveillance of parotid gland malignancy.