

# Incidence Of Hepatitis B Surface Antigen (HBsAg) In Oral Cancer And Carcinoma Of Uterine Cervix

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## SUMMARY

Two hundred and thirty two male and 118 female oral cancer patients, 150 patients with carcinoma of uterine cervix and 50 male and 50 female healthy, age-matched controls without any prior history of jaundice were screened for the presence of Hepatitis B surface antigen (HBsAg) by the reversed passive haemagglutination test (RPHA). HBsAg was detected in none of the normal controls whereas it was present in 11.21 per cent of male and 11.86 per cent of female oral cancer patients and in 13.33 per cent of patients with carcinoma cervix. Treatment has resulted in an increased incidence of HBsAg in both the oral cancer carcinoma cervix patients. The increase in the incidence of HBsAg due to treatment was significant in patients with carcinoma cervix. The depression in immunity due to cancer and radiotherapy may be responsible for the increased incidence of HBsAg in cancer patients.

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## INTRODUCTION

THE discovery of Hepatitis B virus surface antigen (HBsAg) by Blumberg *et al* (1964) gave a tremendous impetus to hepatitis research. The first association between Australia antigen and disease was the discovery of its high prevalence in patients with acute leukaemia but general absence or very low incidence in normals and in patients with other diseases (Blumberg *et al* 1965). The incidence of serum HBsAg in patients with hepato-cellular carcinoma is remarkably high in comparison with that of chronic hepatitis and liver cirrhosis (Mal Ching Chlem *et al* 1981). Recently, an association between the presence of HBsAg with leukaemia and lymphomas was demonstrated (Bhargava *et al* 1982). The incidence of oral cancer and carcinoma of cervix is high compared to other types of cancer in Kerala in South India. An association between

oral cancer and carcinoma of cervix with herpes simplex virus has been demonstrated by Kumari *et al* (1982) of our laboratory. Moreover, an increased incidence of hepatitis in cancer patients is observed. Hence the present study was undertaken to find out whether there was any association between HBsAg and carcinoma of oral cavity and uterine cervix.

## MATERIALS AND METHODS

In all 232 male and 118 female oral cancer patients, were included in the study and 150 patients with carcinoma of cervix were taken. The control group consisted of 50 men and 50 women. All the subjects were in the 40 to 60 year age group. Of these 40 oral cancer (22 males and 18 females) patients and 50 patients with carcinoma of cervix were not undergoing any treatment while all the others had taken or

were on radiotherapy. A detailed history of all the subjects was taken to exclude the possibility of jaundice in the subjects prior to the study. None of the patients received any transfusions or chemotherapy before the investigation was done. About five mls of venous blood was collected and the serum separated as early as possible.

The investigations were carried out positively on the same day, or else the samples were kept at  $-70^{\circ}\text{C}$ . A reversed passive haemagglutination test (RPHA) of the third generation sensitivity as given by Hirata *et al* (1973) and modified by Prince *et al* (1975) was employed for detection of HBsAg. The tests were done by using Raphadex B obtained from M/S. Ortho Diagnostic Systems, New Jersey, U.S.A. For confirming the presence of HBsAg, 'Raphadex B reversed passive haemagglutination tests for confirmation' was performed on all sera found reactive in the screening test. The principle of the confirmation tests is based upon the inhibition of agglutination by specific antibody.

## RESULTS

The results of the study are given in Table I and II. The RPHA showed four per cent positivity in normal controls and 20.63 per cent and

TABLE I

### INCIDENCE OF HbsAg IN ORAL CANCER AND CANCER CERVIX COMPARED TO NORMAL CONTROLS

Subjects	Screening Test	Confirmatory Test
<b>Normal Controls</b> (n = 100)		
Male (n = 50)	2 (4%)	Nil
Females (n = 50)	2 (4%)	Nil
<b>Oral Cancer Patients</b>		
Males (n = 232)	48 (20.69%)	26 (11.21%)
Females (n = 118)	22 (18.64%)	14 (11.86%)
<b>Carcinoma of cervix</b>		
Females (n = 150)	45 (30%)	20 (13.33%)
<b>Male Control Vs</b>		
Male Oral Cancer	P 0.001	P < 0.001
<b>Female Control Vs</b>		
Female Oral Cancer	P < 0.001	P < 0.001
<b>Female control Vs</b>		
Cancer Cervix	P < 0.001	P < 0.001
<b>Female Oral Cancer Vs</b>		
Cancer Cervix	P < 0.05	N.S

18.64 per cent positivity in the male and female oral cancer patients respectively. Carcinoma of cervix patients showed 30 per cent positivity in the RPHA. Compared to normal controls the incidence is significantly higher in the cancer patients. The incidence of HBsAg in carcinoma of cervix is very high even when compared to the oral cancer patients ( $P < 0.05$ ). In the confirmation test no HBsAg was detected in any of the normal subjects whereas 11.21 per cent male and 11.86 per cent female oral cancer patients and 13.33 per cent of the carcinoma of cervix patients showed presence of HBsAg in the sera.

Out of the 22 untreated male and 18 untreated female oral cancer patients HBsAg was detected only in one patient each and out of 50 untreated cervical carcinoma cases, presence of the antigen was confirmed in just three patients. The rest of the patients who were at different stages of treatment presented an increased incidence of HBsAg. Radiotherapy had resulted in an increased incidence of HBsAg, in cases of oral cancer and in carcinoma of cervix. But the increase in the incidence is significant only in carcinoma of cervix ( $P < 0.05$ ).

## DISCUSSION

An association between viral infection and human cancers like Burkitts lymphoma, nasopharyngeal carcinoma and cervical carcinoma has been reported earlier (Roizmann *et al*, 1975). The presence of the herpes simplex virus type 2 (HSV 2) was demonstrated in cervical carcinoma by Rowls (1973) and Seth (1980). Similarly, raised antibody titres to herpes simplex virus type 1 (HSV 1) were demonstrated in oral cancer and carcinoma of cervix (Kumari *et al*, 1982). The incidence of HBsAg in various type of lymphomas and leukaemias were reported (Bhargava *et al*, 1982; Blumberg *et al*, 1968; and Sutnick *et al*, 1971). The presence of HBsAg in hepato-cellular carcinoma is also well documented (Mal Ching Chlem *et al*, 1981, Maupas *et al*, 1975; and Coursaut *et al*, 1980).

The incidence of oral cancer and carcinoma of cervix is high in Kerala compared to other types of cancers. They constitute about 30 per cent and 14 per cent respectively of the total cancer frequency (Padmanabhan and Vasudevan, 1982). It is observed that some of the cancer patients develop jaundice in the course of treatment (Chandrasekharan *et al*, 1980). Hence our attention was drawn to find out the

**TABLE II**  
**EFFECT OF TREATMENT ON THE INCIDENCE OF HbsAg IN CANCER PATIENTS**

Subjects	Before Treatment		After Treatment	
	No. of patients	Incidence of HbsAg	No. of patients	Incidence of HbsAg
<b>Oral Cancer</b>				
Males	22	1 (4.55%)	210	16 (12.32%)
Females	18	1 (5.55%)	100	12 (12%)
<b>Carcinoma of Cervix</b>				
Females	50	3 (6%)	100	17 (17%)

Male oral cancer untreated Vs treated	N.S
Female oral cancer untreated Vs treated	N.S
Carcinoma of cervix untreated Vs treated	P < 0.05
Female treated oral cancer Vs treated carcinoma cervix	N.S

incidence of HBsAg in these type of cancers. We observed high incidence of HBsAg in oral cancer and carcinoma of cervix. Treatment has resulted in an increased incidence in both types of cancers, especially in carcinoma of cervix. Whether the presence of HbsAg is the cause or the result of the disease is not known. Since the incidence is found to be greater on treatment, it is reasonable to assume that the increased incidence is due to depression in the immunity as a result of the cancer and or due to radiotherapy. But this alone cannot explain the higher incidence of the antigen in carcinoma of

cervix when compared to oral cancer. This may be due to the higher surface exposed to radiotherapy in carcinoma of cervix.

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