15
USE OF EPSTEIN-BARR VIRUS SEROLOGY IN THE DIAGNOSIS
OF NASOPHARYNGEAL CARCINOMA IN MALAYSIA

M. Yadav*, N. Malliha*, A.W. Norhanom* and U. Prasad†
*Department of Genetics and Cellular Biology, University of Malaya
†Department of Otorhinolaryngology, University Hospital

SUMMARY

Sera from 129 Malaysian patients with NPC and controls were assayed for antibodies to EBV-related antigens. Histopathologically there were 30 WHO type 1, 20 WHO type 2 and 79 WHO type 3 tumour cases. There was no significant difference between the geometric mean titre (GMT) of the anti-EBV antibodies for the three WHO type tumours. In the Chinese, Malays and Kadazan patients the titres of IgG anti-EA and IgA anti-VCA antibodies increased with the stage of the disease; in the Chinese NPC patients the GMT titres decreased at Stage IV but in the Malay and Kadazan NPC patients the titres continued to increase. Moreover, the GMT for anti-EBV antibodies were higher in the younger NPC patients (<39) compared to older patients at all stages of the disease. It appears that the IgA anti-VCA antibody response is specific to NPC and is a useful diagnostic aid when used alone or when used in combination with IgG anti-EA titres.

INTRODUCTION

In Malaysia, NPC is the most frequently diagnosed neoplasm of the upper respiratory tract with an annual average of 406 which represents an incidence of 2.96 per 100,000 population per year (Yadav et al., in press). The age adjusted incidence in Chinese, Malays and Indians per 100,000 is 16.5, 2.3 and 1.0 for males and 7.2, 0.7 and nil for females respectively (Armstrong et al., 1979). In the ethnic minority groups, like the Kadazans, a bimodal incidence with peaks during adolescence and late
middle age have been noted (Rothwell, 1979; Yadav et al., in press). The current study was initiated to determine the value of EBV serology for the diagnosis of NPC in Malaysia. The patients were drawn from all geographic regions of the country and included the major racial/ethnic groups. Normal serum donors and those patients with other head and neck tumours were included for comparison.

MATERIALS AND METHODS

Patients: The study was initiated in 1982, and all patients histopathologically confirmed for NPC were enrolled. The age range was from 11 to 86 years; the median age was 43 years. By race the series consisted of 91 (70.5%) Chinese, 21 (16.2%) ethnic Malays, 4 (3.1%) Indian and 13 (10.9%) ethnic Kadazans.

The stage of the tumours was determined on the basis of the clinical data according to the Ho system (Ho, 1978a). Blood was collected at first examination and periodically at 4-6 months intervals. All serum samples were aliquoted and stored at -70°C (long periods) or -30°C (short periods) before use.

The biopsy taken from the postnasal space was evaluated by a panel of pathologists and classified according to the standards of the World Health Organization (WHO) into broad categories of squamous cell carcinoma (WHO 1; 37 patients = 28.7%); nonkeratinizing carcinoma (WHO 2; 20 patients = 15.5%), and undifferentiated carcinomas (WHO 3; 72 patients = 55.8%) (Shanmugaratnam and Sobin, 1978).

Immunovirologic assay: Coded serum samples from all patients and controls were tested for antibodies to EBV-induced viral capsid antigen (VCA) and early antigen (EA) by the fluorescence techniques previously described in detail (Henle and Henle, 1966; Henle et al., 1970). Briefly, smears of P3HR-1 cells fixed in cold acetone served for detection of antibodies to VCA. Raji cells superinfected with P3HR-1 virus which expressed about 15-20 percent EA-positive cells were used for titration of anti-EA antibodies. The geometric mean titre (GMT) was calculated from antibody-positive (1:10 dilution) sera in each group.