Short Communication

Epidemiology of melanoma of the eye in the Oxford Region, 1952–78

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Malignant melanoma of the eye is uncommon and there is little knowledge about its epidemiology. Routine statistics which are based on the International Classification of Diseases (World Health Organization, 1977) do not differentiate melanoma of the eye from other histologies of eye malignancy. Data on eye melanoma in parts of the United States have been reported by Scotto et al. (1976). For many other countries eye melanoma data have not been published, but studies have been reported using data on eye cancer in persons aged 15 years and over as a surrogate for eye melanoma data (Hakulinen et al., 1978; Strickland & Lee, 1981).

In the present study, data on all cases of eye cancer occurring in residents of the Oxford Region* 1952–78 were obtained from the Oxford Cancer Registry. For eye melanomas, directly age-standardised incidence rates for each year using the "European" population from "Cancer Incidence in Five Continents" (Waterhouse et al., 1976) as the standard, and mean annual age-specific incidence rates 1952–78, were calculated; the denominators used were annual age-specific population estimates from published sources (Registrar General, 1959; Ministry of Health & General Register Office, 1961–69; DHSS et al., 1970–81) or when these were not available (1952–54) extrapolated estimates. Seasonality of month of birth and of month of first attendance at hospital for eye melanoma were tested by the method of Edwards (1961).

One hundred and forty-five eye cancers in males and 135 eye cancers in females occurred in Oxford Region residents during 1952–78. In the age-group 0–14 years most eye cancers (17 (89%) in males and 18 (78%) in females) were retinoblastomas; under 10% in both sexes (1 male, 2 females) were melanomas, and 1 male and 3 females had other histologies. In the age-group 15 years and over 83% (105) of eye cancers in males and 88% (99) of female eye cancers were melanomas, there was 1 retinoblastoma in a male, and the remaining 20 male cases and 13 female cases were of other histologies. For the melanomas, the exact site within the eye was known in only 120 (58%) cases; most of these tumours arose from the choroid (92), and only 5 arose in the conjunctiva.

There was no significant secular trend in incidence of eye melanoma in males or females (Figure); linear regression coefficients for incidence on year were —0.06 for males and —0.05 for females. Mean annual age-specific incidence rates increased with age, similarly in males and females, without any indication of a peak in middle age (Table). There was no marked laterality of the tumour in males (49 tumours right-sided, 48 left, 1 bilateral, 8 side not known), or in females (50 right, 46 left, 5 not known), or in different age-groups. Month of birth was not significantly seasonal for males, females or both sexes combined; month of first attendance also showed no significant seasonality (for males, number of cases (n)=105, x^2 =0.67; for females, n=98, x^2 =0.13; for both sexes combined, n=203, x^2 =0.85).

As in Finland 1963–72 (Hakulinen et al., 1978), Sweden 1959–65 (Hakulinen et al., 1978) and the United States Third National Cancer Survey 1969–71 (Scotto et al., 1976), the great majority of eye cancers in adults in the Oxford Region were melanoma data are unavailable gross variations in eye melanoma incidence should be detectable from these populations, therefore, and by implication probably for other white populations, when eye melanoma data are unavailable gross variations in eye melanoma incidence should be detectable from incidence data on eye cancers in persons aged over 14 years. There was no substantial secular change in eye melanoma incidence in males or females in the Oxford Region 1952–78, nor probably in the United States 1947/8 to 1969/71 (Scotto et al., 1976). Approximate stability of rates has been found also for incidence and mortality from eye cancers in persons aged 15 years and above in many countries over recent years (Hakulinen et al., 1978; Strickland & Lee, 1981). These secular trends are in marked contrast to the recent rapid increase in skin melanoma incidence in Oxford (Swerdlow, 1979)

*For administrative reasons the boundaries of the Oxford Region were altered slightly in 1974; this is most unlikely to have affected the results materially.

Received 4 October 1982; accepted 25 October 1982.

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0007-0920/83/020311-03 $02.00
and other white populations (Magnus, 1977; Houghton et al., 1980; Jensen & Bolander, 1980), particularly for sites such as the female lower limb (Magnus, 1977; Houghton et al., 1980) where exposure to sunlight is intermittent and dependent on fashions in clothing and behaviour. The apparent lack of effect on the incidence of eye melanoma of the factor(s) causing the increase in incidence of the skin tumour, suggests that these factors may act locally rather than systemically. Several systemic factors might contribute to the aetiology of skin melanoma: for instance, female sex hormones (Sadoff et al., 1973; Beral et al., 1977; Lee & Storer, 1980), polyunsaturated fats (Mackie, 1975), benzodiazepines (Horrobin & Trosko, 1981; Adam & Vessey, 1981), and a “solar circulating factor” (Lee & Merrill, 1970). The role of these factors in melanoma causation could usefully be examined in relation to the eye tumour where these might be less confounding than for the skin tumour by the factor(s) causing the secular increase in the latter.

The cross-sectional age distribution of eye melanoma in Oxford is generally similar to that in the United States (Scotto et al., 1976), in aggregated data for England and Wales 1962–67 (OPCS, 1972) and 1968–70 (OPCS, 1975), and in many other populations (Waterhouse et al., 1976; Hakulinen et al., 1978), with no peak of incidence evident in middle age. In several of the same populations such a peak exists in cross-sectional data for females with skin melanoma (OPCS, 1972; 1975; Waterhouse et al., 1976; Magnus, 1977), especially skin melanoma of the lower limbs (Lee & Yongchajitvedha, 1971; Magnus, 1977; Holman et al., 1980; Houghton et al., 1980). To the extent that this peak is due to a cohort effect for skin melanoma (Day & Charnay, 1981) the peak would not be expected for eye melanoma which has stable rates over time. However, to the extent that the peak for skin melanoma at least of the trunk and lower limbs is due to a real effect of age within cohorts (Magnus, 1981), the difference in age-distribution between the tumours may point to a difference in their aetiology.

The findings about laterality of eye melanoma in the Oxford Region give no support to the
suggestion made from United States data (Scotto et al., 1976) that the left-sided excess in males and right-sided excess in females in those data might be due to the usual seating of men and women in motor cars. A recent study in the United States (Davidorf & Knupp, 1979) showed a right-sided excess in both sexes, significant in males only. At present laterality of eye melanoma does not appear to give any clues to its aetiology.

I thank Miss C. Hunt and her staff at Oxford Cancer Registry for information about cases of eye cancer in the Oxford Region, and Mrs. C. McBride for typing.

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