Demography of Tumors of the Central Nervous System Among the Bantu (African) Population of the Transvaal, South Africa

COLIN FROMAN, D. PHIL. (OXON.), F.R.C.S., AND ROBERT LIPSCHITZ, F.R.C.S.
Department of Neurosurgery, Baragwanath Hospital, and the University of the Witwatersrand, Johannesburg, South Africa

Neoplasms of the central nervous system (CNS) are thought to be extremely rare among the African (Bantu) population of Southern Africa, but few series have been recorded.3-5 This paper reports the incidence of primary CNS tumors over a period of 20 years (1949-68) at Baragwanath Hospital, which serves the Bantu population of the Southern Transvaal.

Material and Methods
About 4,000,000 Africans live within a radius of 200 miles of Baragwanath Hospital. According to Higginson and Oettle,3 the sociological and ethnic characteristics of the population are such that at least 25% (1,000,000) will use a hospital in the event of illness, and this represents the sample from which our CNS tumor cases were drawn. The case statistics for the period 1949-63 were derived retrospectively from the records of the Department of Pathology and the Cancer Research Department of the South African Institute for Medical Research. The statistics for the period 1964-68, however, were obtained from a prospective clinical, radiological, and operative search for CNS tumors. Histological confirmation was obtained in 93% of the mass lesions seen during the latter period. Eight patients with such lesions refused surgery and did not come to autopsy, but were nevertheless included in the tumor series on clinical and radiological grounds.

The tumors were classified according to: 1) urban or rural residence of the patient (Fig. 1); 2) age of the patient at time of first diagnosis (Fig. 2); 3) sex of the patient; 4) year of first diagnosis of the tumor (Fig. 3); and 5) histology and location of the tumor (Fig. 4).

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Results and Comment
There were only 213 patients with primary intradural neoplasms during the 20-year period under review; this represents a very small total. Of these patients 24% lived in rural areas served by the hospital, and their geographic distribution denied any geographic or tribal epicenter for CNS neoplasms. Half of all the tumors recorded were found during the last 5-year period, 1964-68, which constituted the prospective survey. This increase with time is not so striking, however, when the ratio of tumors to hospital admissions is considered. The tumor incidence in respect of total hospital admissions for the four consecutive quinquennial periods was 0.006%, 0.020%, 0.016%, and 0.026% respectively. The low incidence during the first quinquennial period, 1949-53, may be attributed to underdiagnosis in an era which preceded the establishment of a Department of Neurosurgery. The rise in the last quinquennial period, 1964-68, may be due to the clinical zeal associated with the prospective survey. Despite this increase, the absolute incidence remains very low; comparative rates quoted6 for general hospitals serving Caucasian populations are 0.20% to 2.60%, factors of 10 to 100 times the Baragwanath Hospital incidence.

Intracranial meningiomas were the preponderant tumors in the Baragwanath series (70 of 213 or 30.3%), while there were 34 (16%) adult patients with gliomas. This represents a meningioma/glioma ratio of 2 to 1, which is the reverse of the pattern of incidence recorded for Caucasian populations.6 When the tumor incidences in this series are compared with the incidences quoted6 for the Swedish Caucasian population (Table 1), it is apparent that only one-tenth the numbers of gliomas and about one-fifth the
meningiomas are found among the African population served by Baragwanath Hospital.

Over 20 years it may be expected that 1,000,000 Swedes will produce 100 acoustic neurinomas, whereas during the 20 years that constitute the period of this review, only one proven instance of acoustic neurinoma was found in the African population. The apparent immunity to eighth nerve tumors is unexplained, for diffuse neurofibromatosis is a relatively common clinical entity among the African population, and cutaneous, bony, and spinal lesions are frequently seen; in at least five of the patients with gliomas, signs of neurofibromatosis were documented. While CNS tumors other than gliomas, meningiomas, or acoustic neurinomas were recorded sporadically in this tumor series, none is as striking by its absence or presence as the acoustic neurinoma.

The low annual incidence rates for less common tumors recorded for Caucasian populations make comparison with the possibly lower African rates difficult. The spinal meningiomas were the only tumors to show a sex predilection in this series; 12 of 13 occurred in females, a feature noted also in Caucasian series.

The statistics suggest that tumors of the CNS, particularly acoustic neurinomas and