Astrocytomas and the ABO Blood Groups

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In view of the different results obtained in reported investigations of the blood group distributions of patients having astrocytomas, it was decided to analyse a large group of Swedish patients.

Mayr, Diamond, Levine, and Mayr (1956) found that there was no significant difference between the blood group distributions of 385 astrocytoma patients and a control series. Yates and Pearce (1960) analysed 473 cases, according to the year in which the diagnosis was made and the age of the patients. Amongst patients diagnosed before 1946, the blood groups were distributed normally, while amongst those diagnosed after 1945, there was a very significant reduction of group O ($p = 0.0002$). This reduction primarily occurred in children and young adults (patients born after 1930). Gaisford and Campbell (1958) in a small number of patients also found a reduction of blood group O, and an excess of group A. Selverstone and Cooper (1961) analysed 139 patients, and found a highly significant decrease in blood groups O and B, that is, in those patients with a serum anti-A factor.

Material and Method

The first 200 cases diagnosed after the year 1940, and the first 700 diagnosed after the year 1955, were included in the present investigation. The classification of Kernohan was used, so that the astrocytomas (Grades 1-4) include what may be diagnosed elsewhere as glioblastoma multiforme (astrocytomas, Grades 3 and 4). Only tumours lying in the cerebral hemispheres were considered, thus excluding the cerebellar groups which have certain features suggesting that an independent evaluation is desirable. Of the 900 patients having a cerebral astrocytoma there were 546 males (61%) and 354 females (39%).

The control figures were obtained from the extensive survey carried out by Beckman (1959), who studied

donor, conscript, and paternity groups. The latter which he considered the most reliable for statistical purposes, has been used in the Table.

Results

The blood group distributions were analysed according to both the age and sex of the patients. The Table shows the distribution by sex. When

TABLE
ABO BLOOD GROUP DISTRIBUTION OF 900 PATIENTS WITH A CEREBRAL ASTROCYTOMA

Patient Material	Blood Groups				Totals
	A	AB	B	O	
Beckman's control material					
Number	4939	504	1040	3974	10,457
Per cent	47.2	4.8	10.0	38.0	100.0
Astrocytoma cases					
Males					
Number	290	21	49	186	546
Per cent	53.1	3.9	8.9	34.1	100.0
Females					
Number	169	14	32	139	354
Per cent	47.7	4.0	9.0	39.3	100.0
Total cases					
Number	459	35	81	325	900
Per cent	51.0	3.9	9.0	36.1	100.0

all patients, or females alone, were considered, the results showed that there was no essential difference between the blood group distributions of patients with astrocytomas and the controls ($p > 0.05$). However, when male patients alone (546) were considered, there was a significant excess of group A ($p < 0.05$), but not for the other blood groups.

When the blood group distributions were analysed according to the age of the patients, and the year of diagnosis, there was no significant difference between the results of those born before and after 1930, or in those diagnosed after 1945, and before 1946.

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Summary

A statistical analysis of the ABO blood groups of 900 patients having a cerebral astrocytoma indicated that if all patients, or if females alone, were considered, there was no essential difference between the tumour and control groups.

When 546 male patients were evaluated independently, it was found that there was a significant excess of blood group A ($p < 0.05$).

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