International Journal of Health Sciences and Research
www.ijhsr.org ISSN: 2249-9571

Original Research Article

Incidence Patterns of Primary Central Nervous System Tumors (CNS) in Albania

Djamandi P[1], Brace G[2], Kaloshi G[2], Seferi A[2], Petrela M[2]

[1]Hygeia Hospital, Tirana, Albania
[2]University Hospital Center "Mother Teresa", Neurosurgery Service, Tirana, Albania

Corresponding Author: Djamandi P

ABSTRACT

Central nervous system tumors are a heterogeneous group of neoplasms that include all forms of primary and secondary neoplasms developed within the cranial and vertebral cavity. A total of 1883 cases with CNS tumors were registered during 1993 – 2013 and 977 cases (49 %) were evaluated and interviewed during the period 2010 -2013. We note the increasing incidence of CNS tumors during years. Interpretation of the increased number is complicated and we find two peaks, in 1995-1996 and 2001-2002, these periods corresponds to the addition of new diagnostic procedures (CT scan) or improving their quality (MRI).
Age and gender are important risk factors in development of brain tumors. The incidence is higher in adults aged 55- 80 years old, and we determined the exclusive predominance of meningioma on women and a predominance of glioma on men. The impact of improved diagnostic methods was seen particularly in the growth of incidence over the years. Age and gender are important risk factors in development of various brain tumors.

Keywords: Tumors, nervous system, epidemiology, incidence, relative risk

INTRODUCTION

Tumors of the Central Nervous System (CNS) are a heterogeneous group of neoplasms which include all the primary neoplasms or secondary ones developed within the cranial -vertebral cavity. Tumors of the Central Nervous System (CNS) are estimated to be approximately 2% of all the new cancers and the same percentage are reported in European and Non-European population. [1,2,5] They represent an unusual neoplasms group according to the incidences and also a usual cause of death from cancer, thus representing approximately 3.5% of all. [3]

Lastly, an increasing trend of the tumors of Central Nervous System (CNS), is reported by several studies. [1,4] The increased incidence may be attributed to the improvement of the diagnostic techniques; however the real growth probably was attributed due to the increase of risk factors as well as the duration of the exposure to them.

METHODS

We have registered a total number of tumors of Central Nervous System (CNS) of 1883 cases starting from the 1993 up to 2010. Data from this period are taken by the register of pathological examinations in both services, i.e., that of Neurosurgery and Pathological – Anatomy. From all cases, 977 ones (49%) were interviewed analyzing the risk factors during the period December 2010 – December 2013.

The statistical analyze was conducted by Dr. Kaloshi G. using the software LMP 11 (SAS company). OR-

exposure odds ratios and IC- 95% confidence interval was used to determine if the risk factors are considered to be associated with an increasing risk to develop brain tumors. The unconditioned logistic regression includes the correlation with variables as age and sex. Other processing has been needed in order to calculate the potential "confounding factors".

RESULTS

As it is shown in table 1 and figure 1 about the incidence according the years we noticed an increasing of CNS tumors incidence. The interpretation of that growth is complicated from 2 "peaks", respectively from the period 1956-1996 and 2001-2002, periods which coincide with the introduction of new diagnostic imaging tools (CT scan) or their improvement (the presence of MRI). Those procedures have been present for neurosurgeons changing or improving not only the professional experience of the staff but also the diagnostic and therapeutic care for the patients of all ages. The impact of diagnostic improvement may be noticed mainly to the significant increase of the incidence through passing of the years to the extremities of the age groups, respectively under 10 years old and over 70 years old. This means that the doctors were becoming increasingly willing to evaluate and treat the aged patients by changing the popular paradigms.

Examination of the incidence tendency in the high glioma versus low grade glioma shows us a convergence to the growth of the incidence for the age groups of 15-44 years old, meanwhile we do notice a "dramatic" divergence to the incidences of the high grades (a growth) and those of low ones (decreasing tendency) for the age groups of 45 years old (Table 2)

Tab 1 Tendency in the incidence of the tumors according to their histology through years

Year	Benign tumors	Malignant tumors	Total Tumors
1993	3.4	4.8	8.2
1994	3	4.6	7.6
1995	3.1	4.7	7.8
1996	4	6.1	10.1
1997	3.1	4.4	7.5
1998	3.3	4.5	7.8
1999	3.6	4.8	8.4
2000	3.8	5.2	9
2001	4.2	6.1	10.3
2002	4.5	6.6	11.1
2003	4.8	6.8	11.6
2004	5.1	7.1	12.2
2005	5.2	7.2	12.4
2006	5.1	8.1	13.2
2007	5.5	8.4	13.9
2008	5.2	8.5	13.7
2009	5.8	8.8	14.6
2010	5.6	9.2	14.8
2011	5.8	9.4	15.2
2012	5.7	9.2	14.9
2013	6	9.4	15.4

Tab 2 Incidence of tumors according age groups and histology

	GBM	Astro	Oligo	Meningeoma	Medulo/PNET	Ependimoma	Mix Glioma	Total
0-19	0.4	0.8	0.2	0.01	0.7	0.4	0.06	5.1
20-34	0.8	1.3	0.7	0.8	0.3	0.5	0.25	7.2
35-44	1.8	2.1	0.9	2.5	0.15	0.6	0.2	9.3
45-54	4.5	2.6	0.8	5.2	0.1	0.7	0.28	12.6
55-64	8.1	3.8	0.7	7.1	0.05	0.55	0.3	14.1
65-74	10.2	4.2	0.4	9.9	0.08	0.4	0.18	16.6
75-84	9.8	3.9	0.2	11	0.04	0.3	0.1	17.5
85+	7.7	2.4	0.06	10.9	0.03	0.2	0.07	16.2

Age

Age is the main factor in the determination of the incidence and prognosis of the tumors of CNS. The incidence of the tumors seems to present a close relation with patient's age. This based on the fact that different tumors have a higher incidence to certain age groups (higher in age group 64-69 years old, 18.9 per 100 000) as is shown on the table 3.

Sex

Sex represents an important risk factor mainly for the two main types of tumors of CNS, gliomas or neuro-epiteliale tumors and meningiomas (meningeal tumors) where we noticed a dominance of males for gliomas and "an exclusive" dominance of females for meningiomas.

Tab3 Standardized incidence (in x 100.000) according the age group

Age group	Incidence
0-4	0.2
05=09	0.8
10=14	1.8
15-19	2.9
20-24	3.4
25-29	3.7
30-34	4.2
35-39	5.8
40-44	7.4
45-49	8.8
50-54	9.2
55-59	10.4
60-64	14.5
65-69	18.9
70-74	16.4
75-79	15.8
80+	12.7

Tab 4 Standardized incidence (in x 100.000) according the age group and sex

Sex	Benign	Borderline	Malignant
Males	4	1.1	8.2
Females	7.2	1	6.4

DISCUSSION

According to our study there was an increase in the incidence of primary central nervous system tumors. The incidence of brain tumors varies with age and histology. Age and gender are important risk factors in development of brain tumors. In adults aged 55- 80 years old the incidence is higher and the peak incidence in our country is around 65 years old. We determined the exclusive predominance of meningioma on women and a predominance of glioma on men. Glioblastoma and astrocytoma are much more frequently in adults. The impact of improved diagnostic methods was seen particularly on the increasing of incidence over the years.

REFERENCES

1. Arora RS, Alston RD, Eden TOB, Estlin EJ, Moran A, Geraci M, Birch JM (2010) Are reported increases of primary CNS tumours real? An analysis of longitudinal trends in England, 1979 – 2003. Eur J Cancer 46 (9): 1607 – 16
2. Wohrer A, Waldhor T, Heinzl H et al (2009) The Austrian Brian Tumor Registry: a cooperative way to establish a population based brain tumor registry. J Neurooncol 95:401–411
3. Bray F, Engholm G, Hakulinen T, Gislum M, Tryggvado`ttir L, Storm HH, Klint A (2010) Trends in survival of patients diagnosed with cancers of the brain and nervous system, thyroid eye, bone, and soft tissues in the Nordic countries 1964–2003 followed up until the end of 2006. Acta Oncol 49:673–693
4. Greig NH, Ries LG, Yancik R, Rappaport SI (1990) Increasing annual incidence of primary malignant brain tumors in the elderly. J Natl Cancer Inst 82:1621–1624
5. Preston –Martin S. Epidemiology of primary CNS neoplasms. Neurol Clin 1996; 14:273-90.

How to cite this article: Djamandi P, Brace G, Kaloshi G et al. Incidence patterns of primary central nervous system tumors (CNS) in Albania. Int J Health Sci Res. 2017; 7(5):293-295.

****