

7.1 BRAIN AND CENTRAL NERVOUS SYSTEM CANCER

Introduction

Cancer of the brain is one of the less common cancers making up less than 1.5% of adult male and female cancers. However brain cancer is the most common site for solid tumours in childhood and along with leukaemia is one of two cancers that make up 60% of all childhood cancers. Other cancers of the central nervous system are rare and only give rise to around 15 cases in N. Ireland per year

Survival is generally poor compared to many other cancers – around one in five patients are alive after five years. There is no evidence of improvements in survival over time

Risk factors

- Exposure to *ionising radiation*.
- Some genetic conditions (e.g. neurofibromatosis, tuberous sclerosis)
- Some medical conditions (e.g. cerebral palsy in children) increase risk by a small amount, as does a weakened immune system.

Overarching standard 28:

All patients with brain tumours who at surgical biopsy are diagnosed as *Oligodendrogliomas* (a subset of gliomas) should have access to the test for loss of heterozygosity (LOH) 1p/19q in order to better inform their treatment plan.

Rationale:

People who have tumours with LOH 1p/19q can live longer (up to 10 years) compared with those patients whose tumours do not show these genetic changes (approximately survival of up to 2 years).

A recent study suggests that if a test to identify LOH is carried out, it is possible to show likely response to chemotherapy and survival rates.

Currently only high grade tumours are being tested for this loss (i.e. *anaplastic oligodendroglioma*). Only 28 patients accessed this test from 2005 until present.

Given the benefits of this test in informing treatment plans and increasing survival in this group of patients, all patients with a diagnosis of oligodendroglioma and Oligoastrocytomas should have equitable access to this test.

Evidence:

International Agency for Research on Cancer (2007) World Health Organisation Classification of Tumours of the Central Nervous System

Maintz D, Fiedler K, Koopmann J, et al. (1997) Molecular genetic evidence for subtypes of oligoastrocytomas. J Neuropathol Exp Neurol. 1997 Oct;56(10):1098–1104. <http://www.ncbi.nlm.nih.gov/pubmed/9329453>

Okamoto Y, Di Patre P-L, Burkhard C, et al. (2004) Population-based study on incidence, survival rates, and genetic alteration of low-grade diffuse astrocytomas and oligodendrogliomas. Acta Neuropathol. 2004 Jul;108(1):49–56. <http://www.ncbi.nlm.nih.gov/pubmed/15118874>

Fallon KB, Palmer CA, Roth KA, et al. (2004) Prognostic value of 1p, 19q, 9p, 10q, and EGFR-FISH analysis in recurrent oligodendroglioma. J Neuropathol Exp Neurol. 2004 Apr;63(4):314–322 <http://www.ncbi.nlm.nih.gov/pubmed/15099021>

Jaeckle KA, Ballman KV, Rao RD, Jenkins RB, Buckner JC. (2006) Current strategies in treatment of oligodendroglioma: evolution of molecular signatures of response. J Clin Oncol. 2006 Mar 10;24(8):1246-52 <http://www.ncbi.nlm.nih.gov/pubmed/16525179>

Responsibility for delivery / implementation			
HSC Board Public Health Agency HSC Trusts			
Quality Dimension			
Timely, effective & Patient Centred			
Access to this test will better inform treatment plan and may lead to increased survival.			
Performance Indicator:	Data source	Anticipated Performance Level	Date to be achieved by
Oligodendroglioma test for loss of heterozygosity to be available to all patients diagnosed with an oligodendroglioma	Neuropathology Service	100%	March 2011

NOTE: Performance indicators and targets will be reviewed and adjusted as necessary, in the light of the current Budget settlement for 2011/12 to 2013/14.