



STATEMENT FROM THE CLINICAL EFFECTIVENESS UNIT

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GLIOMA AND HORMONAL CONTRACEPTION

Gliomas are glial cell tumours which can occur in the spinal cord or the brain and are the most common type of brain tumour. They vary greatly in their likely rate of growth, differentiation and prognosis. Glioblastoma multiforme is the most common and most aggressive primary brain tumour. Overall, brain and other central nervous system tumours are the ninth most common cancer in the UK, with an overall risk of glioma in women of about 5 in 100,000.¹ Gliomas are more common in men which is why it was previously postulated that female hormones might be protective. Hormone receptors have been found on glioma tumour cells but the role of reproductive factors and risk of glioma remains uncertain.²

A recent paper from Denmark has looked at a possible association between hormonal contraception and risk of glioma in younger women.³ This was a case control study based on data from Danish national registries. Women aged between 15 and 49 years with a histologically confirmed glioma between 2000 and 2009 were age matched with eight population controls. Prescription data for use of combined and progestogen-only hormonal contraception up to 2 years prior to the index date of diagnosis were obtained. 317 cases and 2,126 controls were included in the study. The authors found that ever use of hormonal contraception was associated with an overall odds ratio (OR) of 1.5 (95% CI: 1.2-2.0) and the OR increased with duration of use (long-term, ≥ 5 years: OR, 1.9; 95% CI: 1.2–2.9) although numbers were very small.

The authors' interpretation of the data and conclusion reached is weakened by several factors. The associations between hormonal contraceptive use and glioma are limited by the lack of robust data on dose and duration of exposure. A registry study as such is likely biased to find an association given that glioma is a rare malignancy that has been postulated to be associated with reproductive factors. Core data from registry studies are not compiled for scientific purposes and do not allow for adjustment for confounders.

Previous observational studies on this topic have been relatively sparse and have not provided any conclusive information. They have mostly found no association or a

weak protective effect.^{4,5,6} Many studies also relate to meningioma and hormonal contraception, which this current paper does not address.

Hormonal contraception is used by millions of women worldwide and therefore any potential association with cancer must be rigorously evaluated. This is a small study on a relatively rare, but serious, condition which adds to the literature on risks of hormonal contraception. Further evidence is necessary before any firm conclusions can be drawn on any causal or protective association between glioma and hormonal contraception. The Faculty of Sexual and Reproductive Healthcare does not recommend any change in clinical practice based on the findings from this study.

1. Cancer registrations England 2011. Office of National Statistics, UK.
<http://www.ons.gov.uk/ons/rel/vsob1/cancer-statistics-registrations--england--series-mb1-/no--42--2011/stb-cancer-statistics-registrations-2011.html>
(accessed February 2015)
2. Reproductive factors and exogenous hormone use in relation to risk of glioma and meningioma in a large European cohort study. Michaud DS, Gallo V, Schlehofer B et al. *Cancer Epidemiol Biomarkers Prev.* 2010 Oct;19(10):2562-9.
3. Hormonal contraceptive use and risk of glioma among younger women: a nationwide case-control study. Andersen L, Friis S, Hallas J, et al. *Br J Clin Pharmacol.* 2014; online publication October 26 DOI: 10.1111/bcp.12535 (epublication ahead of print)
4. Brain tumors and hormonal factors: review of the epidemiological literature. Cowppli-Bony A, Bouvier G, Rué M, Loiseau H et al. *Cancer Causes Control.* 2011;22(5):697-714.
5. Risk of brain tumors associated with exposure to exogenous female sex hormones. Wigertz A, Lönn S, Mathiesen T, Ahlbom A, Hall P, Feychting M; Swedish Interphone Study Group. *Am J Epidemiol.* 2006;164(7):629-36.
6. Reproductive factors and hormone use and risk of adult gliomas. Felini MJ, Olshan AF, Schroeder JC et al. *Cancer Causes Control.* 2009;20(1):87-96.