

Functional Outcome Following Treatment of Lower-Grade Gliomas

Akademisk avhandling

som för avläggande av medicine doktorsexamen vid Sahlgrenska akademien, Göteborgs universitet kommer att offentligens försvaras i Hjärtats aula, Blå stråket 5, Göteborg, den 29 maj 2026, klockan 9.00

av Isabelle Rydén

Fakultetsopponent:

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Avhandlingen baseras på följande delarbeten:

- I. Rydén I, Carstam L, Gulati S, Smits A, Sunnerhagen KS, Hellström P, Henriksson R, Bartek J Jr, Salvesen Ø, Jakola AS. Return to work following diagnosis of low-grade glioma: A nationwide matched cohort study. *Neurology*. 2020 Aug 18.
- II. Rydén I, Thurin E, Carstam L, Smits A, Gulati S, Henriksson R, Salvesen Ø, Store Jakola A. Psychotropic and anti-epileptic drug use, before and after surgery, among patients with low-grade glioma: a nationwide matched cohort study. *BMC Cancer*. 2021 Mar 8. Erratum in: *BMC Cancer*. 2022 Mar 31.
- III. Rydén I, Latini F, Munkhammar ÅA, Hellström P, Neimantaite A, Lycett A, Harba D, Carstam L, Blomstrand M, Zetterling M, Smits A, Jakola AS. Reliable cognitive changes the first year following guideline-based treatment of IDH mutated gliomas: a longitudinal multicenter study. *Neuro Oncol*. 2025 Nov 9.
- IV. Rydén I, Buvarp D, Neimantaite A, Carstam L, Harba D, Weyhenmeyer L, Lycett A, Malmqvist S, Ozanne A, Elgeskog E, Corell A, Gómez Vecchio T, Smits A, Jakola A S. Contribution of cognitive function and fatigue to health-related quality of life in patients with IDH-mutant gliomas – from diagnosis to long-term follow-up. *Manuscript*

**SAHLGRENKA AKADEMIN
INSTITUTIONEN FÖR NEUROVETENSKAP OCH
FYSIOLOGI**



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ABSTRACT

Slow-growing gliomas most often affect individuals in midlife. These tumors are incurable, but multimodal treatment has improved survival. Consequences for patient functioning are less well understood. This thesis investigates functional outcomes after treatment, focusing on work, mental health, cognition, and quality of life, to improve knowledge and identify risk factors.

The thesis is based on the following four studies:

Study I examined sick-leave patterns and return to work after first surgery using registry data. Patients with grade 2 gliomas and matched controls had similar sick-leave levels until months before surgery, then increasing in patients. After one year 52% worked and 63% at two years. Previous sick-leave, older age, lower functional status, and oncological treatment delayed return to work at one year. Female sex, comorbidity, and biopsy were associated with lower return to work at two years.

Study II investigated dispensed antiepileptic, antidepressant, and sedative medications after first surgery in patients with grade 2 gliomas. Antidepressants were usually initiated months after surgery, whereas sedatives and antiepileptics rose around diagnosis. Prior use and related diagnoses were the main predictors. Antidepressant use increased in recent years, and female patients had higher use than male patients and female controls.

Study III examined cognitive changes following treatment in a longitudinal multicenter study of patients with IDH-mutated gliomas. Cognitive impairments were common before treatment, and individual declines were primarily observed in executive function, memory, and language. Older age and chemoradiotherapy emerged as risk factors.

Study IV addressed how cognitive functioning relates to quality of life at different stages of the disease trajectory. Reduced global HRQoL was common. Learning and memory were most relevant at diagnosis, language and executive functions at one year, while executive function was most important in the long-term group.

In conclusion, treatment is associated with functional consequences and underscores the need for systematic follow-up, early identification of patients at risk, and interventions to reduce negative long-term effects in these patients.

Keywords: low-grade glioma, IDH-mutation, cognition, quality of life

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