Cognitive effects of dexamethasone in children treated for acute lymphoblastic leukemia

Jansen NCAJ, Kingma A*, Tellegen PJ**, Bouma A**, Veerman AJP***, Kamps WA*
Div of Pediatric Oncology and *Dept of Pediatrics, Groningen University Hospital, Groningen, **Subfaculty of Personality and Developmental Psychology, University of Groningen, Groningen, ***Dutch Childhood Oncology Group (DCLSG/SKION), The Hague

Long-term deleterious effects of glucocorticoids (GC) on brain and memory functioning are well known from *animal* studies and modifications in GC plasma levels significantly alter memory and learning processes. Studies in children with acute lymphoblastic leukemia (ALL) treated with chemotherapy including GC but without cranial irradiation have been controversial, but generally cognitive defects seem to be mild.
To investigate the possible neuropsychological late effects of chemotherapy including GC in children with ALL 44 consecutive newly diagnosed patients (61.4 % boys; median age at first evaluation 6.6 years) were included in a prospective, longitudinal and nationwide study. Patients were treated with chemotherapy only according to the DCOG ALL-9 study. This treatment consisted of systemic chemotherapy including oral dexamethasone (DEX) (daily gifts of 6 mg/m^2 during 6 weeks remission induction and 2 weeks daily oral DEX alternated with 5 weeks methotrexate and 6-mercaptopurine during 24 months maintenance; triple intrathecal chemotherapy, including prednisolone was also given during the first year of maintenance). Extensive neuropsychological assessment (measures of intelligence, learning and memory, attention, language, executive and visual-motor function) were performed at diagnosis and 2.4 years later, after cessation of treatment. Test results were compared for patients in a repeated measurement design and for patients to 27 healthy sibling controls. Results show mean scores for patients before and three to six months after treatment and no significant differences between patients and controls at both evaluations. Mean scores were in the average range for any cognitive domain including auditory and visual memory. No significant differences were found for boys and girls or for different age groups.
Conclusion:We found no evidence for general cognitive impairment or specific memory dysfunction shortly after chemotherapy including GC for children with ALL. Neuropsychological evaluations will be repeated 2 years after cessation of therapy, to study long-term adverse effects of GC treatment.

Nathalie C.A.J. Jansen, Div. of Pediatric Oncology, Groningen University Hospital, Postbus 30.001, 9700 RB Groningen, t 030-2504112, e-mail n.c.a.jansen@wkz.azu.nl

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