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Our reasons to perform biopsies in Diffuse Intrinsic Pontine Gliomas (DIPG)

Santiago Candela Cantó[1], Angel Montero Carcaboso[2], Patricia Puerta Roldán[1], Mariana Alamar Abril[1], Jordi Muchart López[3], Mariona Suñol Capella[4], Antonio Guillén Quesada[1], Ioannis Roussos Prindesis[1], Andrés Morales La Madrid[2], Jaume Mora Graupera[2], Ofelia Cruz Martínez[2], Gemma García-Fructuoso[1]

[1] *Neurosurgery Department, Hospital Sant Joan de Déu Barcelona, Universitat de Barcelona, Spain*

[2] *Oncology Department, Hospital Sant Joan de Déu Barcelona, Universitat de Barcelona, Spain*

[3] *Diagnostic Imaging Department, Hospital Sant Joan de Déu Barcelona, Universitat de Barcelona, Spain*

[4] *Pathology Department, Hospital Sant Joan de Déu Barcelona, Universitat de Barcelona, Spain*

Introduction: DIPGs are a challenge in pediatric oncology due to their grim prognosis. This is in part because of our limited knowledge of its biology. We have started to perform biopsies to obtain viable tumoral tissue. Besides confirming the histologic diagnosis, our goal is to study this tumor at a molecular level allowing a better comprehension of this condition and identifying potential future therapeutic targets.

Methods: We have recruited the patients diagnosed of DIPG in our Hospital since we started performing biopsies of brainstem lesions in January of 2012. We have reviewed demographic, clinical, therapeutic and survival data and, when biopsied, rentability and complications of the procedure.

Results: We have diagnosed 9 children affected with DIPG (3 to 13 years old). Treatment included hypofractionated radiotherapy and posterior chemotherapy. There was only transient improvement of symptoms with radiotherapy. 4 cases required treatment for associated hydrocephalus. At the moment of sending this abstract 5 children have died with an overall survival of 7.9 months.
5 children have been biopsied (2 in Necker Hospital in Paris and 3 in our Hospital). Two children had a transient neurologic impairment due to the biopsy. The pathology was WHO grade III astrocitoma in all cases. We have obtained tumor cultures in 4 of the 5 biopsied tumours and in a necropsy. Sequentiation and chromosomic analysis has been performed in all cases. We have obtained two animal models of DIPG in rat and mouse, and we are in the process of developing 5 models more.

Conclusion: DIPG biopsies are useful not only for pathological diagnosis, but for obtaining viable tumoral tissue for biological studies and developing animal models. With this strategy we hope to progress in our knowledge of this condition and to be able to conceive more effective treatments.