Gamma Knife subcaudate tractotomy for treatment-resistant depression and target characteristics

Marwan Hariz¹

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The authors used the subcaudate target to perform a bilateral subcaudate tractotomy using Gamma Knife surgery in a patient with severe depression, showing that the patients already 4 months after surgery improved markedly on the Hamilton rating scale for depression and could stop using medication.

The authors state no aggravation or neurological deficit during the 2.5-year follow-up.

The paper is extremely detailed in the technique of imaging and targeting and dose planning and the authors try to provide a rationale to use the subcaudate target rather than the more frequently published anterior limb of the internal capsule or the dorsal cingulum; these two targets have been used more widely for treating depression, albeit with radiofrequency coagulation.

As far as the more modern literature on the subcaudate tractotomy is concerned, it seems that a subcaudate tractotomy is usually added to a previous cingulotomy to provide a limbic leucotomy in patients in whom the cingulotomy had not helped [1, 2].

The present report is to the best of my knowledge the first description of the use of Gamma Knife radiosurgery to target the subcaudate area primarily and exclusively.

One has to go as long back as to Geoffrey Knight to find literature describing the use of radiation to produce lesions in that area: Knight had used radioactive yttrium to perform

subcaudate tractotomies [3]. There may have been reasons why that target has been abandoned as the primary target for surgery of depression, regardless of the method used?

It would have been good if the authors had provided in this single case report equally detailed data on the neuropsychological outcome in this patient after the procedure. Also if the authors are encouraged in the future to provide data on similar patients treated with a similar technique on the same target so that we are not left with a single patient who “did well” and maybe we can avoid the well-known reporting bias of only successful patients, which is so frequent in the literature on psychiatric surgery.

References

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✉ Marwan Hariz
m.hariz@ucl.ac.uk

¹ Simon Sainsbury Chair of Functional Neurosurgery, UCL Institute of Neurosurgery, London, UK