

Clinical Commissioning Policy Statement Stereotactic Radiosurgery and Stereotactic Radiotherapy for Primary Non-Germ Cell Pineal Tumours (All Ages)

NHS England Reference: 170089P

Commissioning Position

Summary

Stereotactic Radiosurgery (SRS) or Stereotactic Radiotherapy (SRT) is available as a treatment option through routine commissioning for palliative treatment of patients with primary non-germ cell pineal region tumours within the criteria set out in this document.

Information about stereotactic radiosurgery and stereotactic radiotherapy

The intervention

The basic principle of SRS and SRT is the destruction of tissues by administration of a highly focused high dose of radiation. The procedure allows radiation to be limited to the target area and thus helps spare the surrounding tissues as much as possible.

The term SRS is used to mean treatment given as a single dose, and SRT as a hypofractionated treatment of not more than five fractions. This policy statement applies to both of these approaches. Commissioning arrangements for fractionated treatments or larger tumour volumes utilising a larger number of fractions are beyond the remit of this policy.

SRS/SRT is a highly conformal radiotherapy treatment to a precisely delineated target volume, delivered using stereotactic localisation techniques. A multi-disciplinary team (MDT) of neurosurgeons, neuro-oncologists and neuro-radiologists, physicists, radiographers, and paediatric clinical oncology and general anaesthetic teams for paediatric and teenage and young adult (TYA) patients, should be involved in SRS/SRT case selection, treatment planning and delivery.

The condition

The 2007 World Health Organisation (WHO) classification of central nervous system tumours divides non germ cell pineal gland tumours into four groups: pineocytoma (grade I); pineal parenchymal tumours of intermediate differentiation (grade II or III); papillary tumour of the pineal region (grade II or III); and pineoblastoma (grade IV).

Papillary tumour of the pineal region (PTPR) is a rare neuro-epithelial tumour that was added to the 2007 (WHO) classification of central nervous system (CNS) tumours. The biological behaviour of PTPR is variable and appears to correspond to WHO grade II or III.

In Europe and North America, pineal tumours account for less than 1% of all primary brain tumours. Pineal tumours are more common in children aged 1 to 12 years where these constitute about 3% of brain tumours.

Each year around 400 children are diagnosed with brain tumours in the UK, of which around 12 will be estimated to be diagnosed with a pineal tumour and, of these, 30-80% will have non germ cell tumours (4-10).

These tumours are very rare in adults and, given the variety of determining factors, it is difficult to get a robust estimate of the numbers of individuals (adults and children) that are likely to be eligible for SRS/SRT. Based on the information that is available, it has been estimated that less than 10 cases (all ages) per year will be suitable for SRS/SRT treatment.

Current treatments

Microsurgery and/or fractionated proton beam therapy (PBT) or external beam radiotherapy (EBRT) plus or minus chemotherapy neoadjuvantly, concurrently or adjuvantly is the standard first line treatment package for all of these tumour types.

In the palliative setting, when curative options have been exhausted, the management options for these patients may be:

1. Surgical removal;
2. SRS or SRT;
3. Fractionated radiotherapy;
4. Chemotherapy or other systemic agent;
5. No intervention (Best supportive care).

Comparators

There have been no studies with treatment comparators. Surgical resection and/or fractionated proton beam therapy (PBT) or external beam radiotherapy (EBRT) plus or minor chemotherapy neoadjuvantly, concurrently or adjuvantly is the standard first line treatment package for non germ cell pineal tumours. SRS treatment is only considered when all other curative treatments have failed or been discounted, including conventional fractionated re-irradiation.

Clinical trial evidence

Three clinical papers were included in the submission to the Clinical Panel who decided that the policy statement could proceed without a full independent evidence review.

The Clinical Panel recommended that the proposition should be considered for routine commissioning on the basis that there was evidence that the treatment was efficacious in controlling or reducing tumour volume provided the usual treatment options had been exhausted in the face of growing tumour. The Clinical Priorities Advisory Group (CPAG) had previously approved implementation of a clinical policy for rarer tumours for adults on the bases of tumour growth control.

Paper 1. Lekovic GP et al. Role of Gamma Knife surgery in the management of pineal region tumors, *Neurosurg Focus* 23 (6):E12, 2007

The authors retrospectively reviewed seventeen patients who underwent SRS for non-metastatic tumours of the pineal region. The mean treatment volume was 7.42 cm³ (range 1.2–32.5 cm³). Prescribed doses ranged from 12 to 18 Gray (Gy). Independent neuroradiologists reviewed all follow-up imaging studies for evidence of progression of disease. One patient died 6 days after SRS. Mean clinical and imaging follow-up in the remaining 16 cases was 31 months. Local control was established during a mean neuroimaging follow-up period of 31 months (range 1–95) in 16 patients (100%). There were no new neurological deficits attributable to SRS. Three patients died (including the one who died 6 days after Gamma Knife Surgery (GKS)) during the follow-up period. They concluded that excellent control of pineal region brain tumours can be obtained with SRS when it is used in conjunction with surgery, conventional radiation therapy, or both. Patient survival and quality of life can be optimized through the use of multimodal treatment, including surgery, conventional radiation therapy and/or radiosurgery, and chemotherapy, when applicable.

Paper 2. Ris P et al. Stereotactic Radiosurgery of a Papillary Tumor of the Pineal Region: Case Report and Review of the Literature. *Stereotact Funct Neurosurg* 2013.91:186–189.

The authors report the first case of SRS of a histologically confirmed papillary tumour of the pineal region. After establishing the diagnosis by stereotactic biopsy, the patient was treated with SRS. Five years after treatment, the tumour size is still decreasing, showing a good response to the treatment.

Paper 3. Kobayashi T, Lunsford LD (eds): Pineal Region Tumors. Diagnosis and Treatment Options. *Prog Neurol Surg*. Basel, Karger, 2009, vol 23, pp 44–58

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The authors evaluated 20 pineal parenchymal tumour patients who underwent radiosurgery over a 20-year period. Thirteen patients had pineocytoma, 5 patients had pineoblastoma and 2 patients had mixed pineal parenchymal tumours. The median radiosurgery prescription dose to the tumour margin was 15.0 (12–20) Gy. At an average of 54.1 (range, 7.7–149.2) months, 6 patients had died and 14 patients were living. The overall survival after radiosurgery was 95.0, 68.6, and 51.4% at 1, 5 and 10 years, respectively. Patients with pineocytomas had 1-, 3- and 5-year overall survivals of 100, 92.3 and 92.3%, respectively. In 19 patients who were evaluated with imaging, 5 (26%) demonstrated complete regression, 9 (47%) had partial regression, 2 (11%) had stable tumours and 2 (11%) showed local in-field progression. The progression-free survival after stereotactic radiosurgery for all type of pineal parenchymal tumours was 100, 89.2 and 89.2% at 1, 3, 5 years after radiosurgery, respectively.

Adverse events

The limited studies described adverse events related to tumour progression rather than the treatment. SRS in the pineal region can theoretically cause injury to the quadrigeminal plate (double vision) and the brainstem (multiple symptoms of brainstem dysfunction).

Implementation

Criteria

Patients who have recurrent and progressive residual disease of a biopsy confirmed pineal tumour in the cranial cavity, following radical intent first line treatment, for whom repeat surgical resection is deemed too high-risk or unlikely to succeed with tumours that are not diffusely infiltrative.

AND

- Patients are not suitable for radical treatment with surgical resection and/or fractionated PBT/EBRT +/- chemotherapy neoadjuvantly / concurrently / adjuvantly
- Absent or stable disseminated metastatic disease apart from target lesion(s)
- Volume of tumour suitable for SRS/SRT within volume limits deemed to be safely and effectively treated by SRS/SRT
- Expected survival is at least 6 months
- At least 6 months must have elapsed since most recent fractionated irradiation at the same site (Photons or Protons)
- At least 6 months must have elapsed since the last SRS/SRT of the target lesion
- At least 3 months must have elapsed since the last SRS/SRT of another distant lesion (and no overlap of previous and current volume)
- Lansky play-performance scale of ≥ 50 or WHO performance status of at least 2

AND

All children are discussed at the paediatric Rare Brain Tumour national multidisciplinary team (MDT) meeting and treatment is considered appropriate.

Effective from

November 2018

Recommendations for data collection

The commissioned SRS/SRT services should collect outcome data on this treatment modality and provide an annual report on numbers treated and outcomes including;

- Overall Survival
- Progression Free Survival
- Neurological deterioration at 0/6/12 months
- Symptomatic imaging changes requiring treatment
- Adverse events

Mechanism for funding

There is an agreed price for the delivery of SRS/SRT. All treatments delivered for this indication will fall within these agreed pricing arrangements.

Policy review date

This is a policy statement, which means that the full process of policy production has been abridged: a full independent evidence review has not been conducted; and public consultation has not been undertaken. If a review is needed due to a new evidence base then a new Provisional Policy Proposal needs to be submitted by contacting Clinical Effectiveness Team england.cet@nhs.net.

Links to other Policies

This document updates the existing NHS England policy for rarer CNS tumours for SRS/SRT <https://www.england.nhs.uk/commissioning/wp-content/uploads/sites/12/2016/08/clinical-com-pol-16058p.pdf>

Equality Statement

Promoting equality and addressing health inequalities are at the heart of NHS England's values. Throughout the development of the policies and processes cited in this document, we have:

- given due regard to the need to eliminate discrimination, harassment and victimisation, to advance equality of opportunity, and to foster good relations between people who share a relevant protected characteristic (as cited under the Equality Act 2010) and those who do not share it; and
- given regard to the need to reduce inequalities between patients in access to and outcomes from healthcare services and to ensure services are provided in an integrated way where this might reduce health inequalities.