ALK-positive NSCLC: Frequency of Routine Head Magnetic Resonance Imaging (MRI): Need for UK Protocol.

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1.0 Introduction

1.1 ALK-positive NSCLC is caused by the rearrangement of the anaplastic lymphoma kinase (ALK) gene with another gene, inducing tumour growth. Over 70% of patients are diagnosed at stage IV[1], when there is no cure but modern targeted therapy may extend the life of some patients, sometimes for many years[2.] About 73% of patients are never or light smokers[3] and about half are under the age of 52 years at diagnosis[4].

1.2 ALK Positive Lung Cancer (UK) is a charity registered in England and Scotland. Its aims are to support and empower patients with ALK-positive LC; to advocate for best practice throughout the UK; and to raise awareness of LC in never-smokers.

1.3 ALK-positive NSCLC patients are more likely to develop brain metastases than other lung cancer patients[5], with 26% having brain metastases at diagnosis[6].

1.4 Current 2nd generation Tyrosine Kinase Inhibitors (TKIs), Alectinib and Brigatinib, are effective in controlling brain metastases for many patients but a further 20% are likely to develop brain metastases within 2 years of diagnosis[7].

1.5 Early identification of brain metastases is important so that stereotactic radiotherapy (SRS) treatment be explored. SRS is highly-focused, high dose radiotherapy suitable for a small number of brain metastases only. Treating brain metastases in a timely fashion is important to prevent difficult and impactful symptoms such as impaired thinking, limb weakness and seizures, and may well help reduce the need for long-term steroids.

1.5 In contrast, delayed identification of brain metastases, including waiting for patients to exhibit symptoms, may potentially mean greater numbers and larger brain metastases preventing SRS or increasing the risk of SRS complications.

1.6 The alternative form of radiotherapy, whole brain radiotherapy, is inferior to SRS as brain metastases are controlled for a shorter time and it is associated with more side effects[9].

1.7 MRI is the most effective way of identifying brain metastases[8] as CT scans have limited sensitivity for detecting small brain metastases which are usually suitable for SRS.

2.0 Patient Data

2.1 A survey of patients published in 2022 by the ALK Positive Lung Cancer (UK) Charity indicated a wide variation in the frequency at which head MRI is carried out in UK cancer centres[10].

2.2 57 patients responded to a survey conducted by the Charity in March 2025, as follows –

Frequency of Regular Head MRI					
Intracranial Control	Never *	3-monthly	6-monthly	12-monthly	other
With brain metastases (n=15)	-	12 (86%)	1 (7%)	-	1 x 4 months 1 x 4 months CT
Without brain metastases (n=42)	16 (38%)	1 (2%)	17(40%)	6 (14%)	1 x 8 months 1 x 6 months CT

* Some patients report that they will receive a head MRI if they exhibit symptoms.

2.3 Patients are aware that finding brain metastases may, but not always, require them to surrender their driving licneces[10]. It is for the patient, in consultation with the doctor, to decide whether to forego regular routine surveillance head MRIs for this reason.

2.4 Patients talk to each other and cannot understand that there is not an agreed national protocol for the frequency of head MRI in those affected by ALK-positive NSCLC.

3.0 Guidelines

3.1 There are no approved national guidelines in the UK or internationally concerning the frequency of head MRI for ALK-positive LC patients.

3.2 The National Institute for Health and Care Excellence (NICE) issues guidance on management of brain metastases which allows follow up of patients with head MRI, according to their risk.

3.3 The European Society for Medical Oncology (ESMO) provides guidelines for the management of brain metastases, including the frequency of scans.

3.4 The American Society of Clinical Oncology (ASCO) has guidelines about frequency of MRI, as does the Clinical Oncology Society of Australia (COSA), the Canadian Association of Pharmacy in Oncology (CAPhO) and many other countries.

3.5 Many UK oncologists follow the ESMO guidelines but more commonly individual health trusts have developed their own local protocols which often do not account for specific subgroups of patients with a greater preponderance for brain metastases, such as those with ALK alterations, which are more associated with brain metastases[11].

4.0 Best Practice in the UK

4.1 The Charity has considered

- the guidelines produced by the organisations referred to above, in particular the NICE and ESMO guidelines
- the protocols in use at UK centres where large number of ALK-positive patients are treated5.0
- the views of UK leading thoracic oncologists.

5.0 National Protocol

The Charity recommends that the protocol below be adopted by all Hospital Trusts in the UK as best practice for the frequency of head MRI of ALK-positive NSCLC patients.

Situation	Frequency of Head MRI
At diagnosis of ALK-positive NSCLC	All patients to receive head MRI to establish the presence of brain metastases and a baseline for future comparison.
If no brain metastases are found at diagnosis	6-monthly scans
Brain metastases present at diagnosis or Brain metastases develop during treatment	3-monthly scans. Scans can reduce to 4 or 6-monthly if either complete response (disappearance of lesion) or durable partial response (minimal residual abnormality that is stable) over a prolonged period at least 12 months.

This Best Practice statement is based on the efficacy of 2nd generation Alectinib and Brigatinib. It may need to be amended if 3rd generation TKIs, e.g. Lorlatinib, become available for first line use.

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