ALK-positive Non-Small Cell Lung Cancer (NSCLC)

Summary by ALK Positive Lung Cancer (UK)

Introduction

ALK-positive is a rare type of NSCLC in which there is an abnormal fusion of the anaplastic lymphoma kinase (ALK) gene with another gene, creating an abnormal protein that tells cell to grow and divide out of control.

ALK-positive NSCLC was not identified until 2007.

About 3% of all lung cancers in the UK will have the ALK fusion.

It is acquired and not inherited.

The cause of the abnormal fusion is currently unknown.

An ALK-positive patient is typically –

A non-smoker or smoked very little

Under the age of 52 years, many are much younger

Over half are female

At Diagnosis

87% are diagnosed at Stage 4 when the cancer has spread to other organs and/or other parts of the body.

30% will have brain metastases (tumours).

Treatment

Patients diagnosed early are usually treated with surgery, radiotherapy, or chemotherapy with curative intent.

Patients with advanced cancer are usually treated with targeted therapy taken by mouth.

Tyrosine Kinase Inhibitors (TKIs) are targeted treatment for ALK-positive lung cancer.

TKIs specifically block the abnormal fusion protein thus preventing uninhibited cell division and cancer growth.

Currently, three TKIs are prescribed in the UK –

Alectinib and Brigatinib are 2nd generation TKIs and Lorlatinib is 3rd generation. A 4th generation TKI, Neladalkib, is in trial.

TKIs are not a cure and inevitably the cancer will become resistant and grow.

Sometimes, the growth will be localised and can be treated with radiotherapy or surgery and the patient continues to take the TKI.

If the growth is more widespread a change of TKI might be prescribed.

It is important to know what is driving the growth and tissue or liquid biopsies may provide the answer.

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Management

TKIs can have adverse effects on vital organs, e.g. liver function, including high cholesterol, and cardiac risk.

Patients are also at high risk of developing brain tumours and blood clots.

Regular scans and blood tests are essential to identify problems early.

Scans will include Magnetic Resonance Imaging (MRI) of the head for for brain tumours, Computerised Topography (CT) of the body to check for cancer growth. and Electrocardiograph (ECG) of the heart,

If blood clots arise, long-term medication may be required.

Other Side Effects

All TKIs may produce side effects, which may include –

- Fatigue
- Sun sensitivity
- Weight gain
- Neuropathy (nerve pain)
- Constipation
- Diarrhoea
- Mood swings

Anxiety

All patients will suffer anxiety to a lesser or greater extent. This is especially true in the lead up to scans and whilst waiting for results.

Prognosis

Clinical trial results will often report median Progression Free Survival (mPFS). This is the time before half of patients in the trial experience growth of their cancer.

Some trials report on median Overall Survive (mOS), which is the time between the start of the trial and the death of half the patients.

These measures are used to compare the effectiveness of various treatments.

Trials will also report on the number of patients who didn't respond to the trial drug, the number who had a patrial response and those that had a complete response. Typically, about 20% of patients will not respond to the trial drug.

In a study of Alectinib, half the patients lived over 8 years, mOS.

In a study of Lorlatinib, over half the patients did not experience any growth in their cancer after 7 years, mPFS.

Treatment is not effective for some patients and, at the present time, it is not possible to predict how an individual will respond to treatment.

However, more patients are living longer.

Many are able to live relatively normal lives – working and taking holidays.

There is a huge amount of research going on and it can be expected that life expectancy will continue to increase.

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