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Carvykti (*ciltacabtagene autoleucel*)

An overview of Carvykti and why it is authorised in the EU

What is Carvykti and what is it used for?

Carvykti is a medicine used to treat adults with multiple myeloma (a cancer of the bone marrow) when the cancer has come back (relapsed) and has not responded to treatment (refractory).

It is used in adults who have received at least one prior therapy, including an immunomodulatory agent and a proteasome inhibitor, whose disease has worsened since the last treatment, and for whom treatment with lenalidomide did not work (refractory).

Multiple myeloma is rare, and Carvykti was designated an 'orphan medicine' (a medicine used in rare diseases) on 28 February 2020. Further information on the orphan designation can be found here: ema.europa.eu/medicines/human/orphan-designations/eu3202252

Carvykti contains the active substance ciltacabtagene autoleucel, consisting of genetically modified T cells (a type of white blood cells).

How is Carvykti used?

Carvykti can only be given to patients by trained doctors in specialist hospitals.

Carvykti is prepared using the patient's own T-cells which are extracted from the blood, genetically modified in the laboratory, and then given back to the patient as a single infusion (drip) into a vein. Carvykti must only be given to the patient whose cells were used to make the medicine.

Before having Carvykti, the patient should have a short course of chemotherapy to clear away their existing white blood cells, and should receive paracetamol and an antihistamine medicine just before the infusion to reduce the risk of reactions to the infusion.

A medicine called tocilizumab (or a suitable alternative when tocilizumab is unavailable due to a shortage), and emergency equipment must be available in case the patient has a potentially serious side effect called cytokine release syndrome (see description under risks section below).

Patients should be closely monitored for side effects daily for 14 days after the Carvykti infusion and then periodically for an additional two weeks. Patients are advised to stay close to a specialist hospital for at least four weeks after the Carvykti infusion.

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For more information about using Carvykti, see the package leaflet or contact your doctor or pharmacist.

How does Carvykti work?

Carvykti contains ciltacabtagene autoleucel which consist of the patient's own T cells that have been modified genetically in the laboratory, so that they make a protein called chimeric antigen receptor (CAR). CAR can attach to a protein called B cell maturation antigen (BCMA) that is present on the surface of multiple myeloma cells.

When Carvykti is given to the patient, the modified T cells attach to BCMA and then kill the myeloma cells, thereby helping to clear the multiple myeloma from the body.

What benefits of Carvykti have been shown in studies?

A first study showed that a single infusion of Carvykti was effective at clearing cancer cells in patients with multiple myeloma that had returned and did not respond to three or more previous treatments. After one and a half year, about 84% of patients (95 out of 113) responded to the treatment and 69% (78 out of 113) had signs that the cancer had disappeared (complete response). Carvykti was not compared to another medicine in this study.

These results were better than those seen in other studies of patients receiving standard treatments for multiple myeloma.

A second study showed that Carvykti was effective in patients with multiple myeloma that had returned and did not respond to one to three previous treatments including lenalidomide. Patients received either Carvykti after bridging therapy (standard treatment received while awaiting the manufacture of Carvykti) or standard treatment alone. Standard treatment consisted of bortezomib, pomalidomide and dexamethasone or daratumumab, pomalidomide and dexamethasone. After nearly 16 months of treatment, fewer patients who received Carvykti had their disease worsen (31%, 65 out of 208) compared with patients who received standard treatment alone (58%, 122 out of 211 patients).

What are the risks associated with Carvykti?

For the full list of side effects and restrictions with Carvykti, see the package leaflet.

The most common side effects with Carvykti (which may affect more than 1 in 5 people) include neutropenia (low levels of neutrophils), fever, lymphopenia and leucopenia (low levels of lymphocytes or other white blood cells), anaemia (low levels of red blood cells), thrombocytopenia (low levels of blood platelets), hypotension (low blood pressure), pain of the muscles and bones, high level of liver enzymes, upper respiratory tract infection (nose and throat infection), diarrhoea, hypogammaglobulinemia (low immunoglobulin blood levels), nausea, headache, cough, tiredness, as well as cytokine release syndrome (a potentially life-threatening inflammatory condition that can cause fever, vomiting, shortness of breath, pain and low blood pressure).

People who cannot have chemotherapy to clear away their existing white blood cells must not receive Carvykti.

Why is Carvykti authorised in the EU?

Despite the availability of an increasing number of treatments for multiple myeloma, the disease eventually usually comes back and becomes incurable. In two main studies, a single infusion of

Carvykti led to clinically meaningful response rates in multiple myeloma patients whose cancer had come back and did not respond to previous treatments.

Serious side effects, particularly cytokine release syndrome and a neurological disorder called ICANS (immune effector cell-associated neurotoxicity syndrome), can occur and the product information contains advice for managing them. The European Medicines Agency decided that Carvykti's benefits are greater than its risks and that it can be authorised for use in the EU.

Carvykti was originally given 'conditional authorisation'. The authorisation has now been switched to standard authorisation as the company has provided additional data requested by the Agency.

What measures are being taken to ensure the safe and effective use of Carvykti?

The company that markets Carvykti must carry out studies to collect more information on the long-term safety and effectiveness of Carvykti. It must also ensure that hospitals where Carvykti is given have appropriate expertise, facilities and training. Tocilizumab, or suitable alternatives in case of its unavailability due to shortage, must be available for the management of cytokine release syndrome.

The company must also provide educational materials for healthcare professionals and patients about possible side effects, especially cytokine release syndrome and neurotoxicity.

Recommendations and precautions to be followed by healthcare professionals and patients for the safe and effective use of Carvykti have also been included in the summary of product characteristics and the package leaflet.

As for all medicines, data on the use of Carvykti are continuously monitored. Side effects reported with Carvykti are carefully evaluated and any necessary action taken to protect patients.

Other information about Carvykti

Carvykti received a conditional marketing authorisation valid throughout the EU on 25 May 2022. This was switched to a full standard marketing authorisation on 19 April 2024.

Further information on Carvykti can be found on the Agency's website: ema.europa.eu/medicines/human/EPAR/Carvykti

This overview was last updated in 03-2024.