Hello, I am Maria Martinez and in this presentation I am going to explain Super-Refractory Status Epilepticus through a clinical case resolved with therapeutic hypothermia.

Throughout the presentation we will see a brief introduction, we will present and evaluate the case, we will see the treatment strategies, the additional measures implemented, what therapeutic hypothermia is, the recovery and follow-up after treatment and a general conclusion.

Status epilepticus is a seizure that persists despite treatment.
It is a neurological emergency that requires immediate medical attention.
To understand it, a clinical case of a patient with super-refractory status epilepticus is presented.

The patient is a 14-year-old boy with no history of epilepsy.
His initial symptoms are fever, headache, vomiting and generalized tonic-clonic seizures.
The initial suspicion is viral encephalitis.
Tests for viral agents were performed and came out negative.

The evolution of the case is that the seizures persist despite the initial treatment, developing a super-refractory epileptic status, persisting for more than 24 hours despite the use of anesthetics.

The treatment strategies depend on the level where the patient is.
In the first level, benzodiazepines such as midazolam are taken, in the second level, anticonvulsants such as phenytoin or levetiracetam, in the third level, anesthetics such as thiopental or Propofol.
In this case, conventional treatment strategies failed to control the seizures.
On the left is a graph of the drugs administered in super-refractory epileptic status, with the drugs used versus the time of application in hours.

Given the lack of response to conventional treatments, additional measures were implemented to try to control the seizures.
A high-fat, low-carbohydrate ketogenic diet is followed, since it has been shown that this diet can have anticonvulsant effects.
Magnesium sulfate, known for its anticonvulsant properties, is taken, in addition to using human gammaglobulin, to modulate the immune system, and its potential in the treatment of some autoimmune encephalitis has been studied.
Finally, an open tracheotomy was performed to facilitate long-term mechanical ventilation.
A fragment of Mozart's Sonata for Two Pianos in D Major, K. 448, will be played, which could have a positive effect on epilepsy due to its rhythmic and melodic structure that seems to synchronize with calmer and more orderly brain patterns. Although its benefits are not universal, it can be used as a complementary therapy.
Now we will go into a little about what therapeutic hypothermia is. It is a medical procedure that reduces the patient's body temperature to protect the brain from

damage caused by lack of oxygen. It is the last resort in the absence of response to other therapies.
In this case, therapeutic hypothermia was implemented with the use of a cooling machine at 33 degrees Celsius. Therapeutic hypothermia was effective in controlling the patient's seizures, causing seizures to cease when they reached 34.3 degrees.
On the left we can see an image showing a patient using this type of machine.

After treatment, for his recovery, the patient was gradually rewarmed to avoid complications. The patient was monitored neurologically throughout to assess possible sequelae.
He was eventually discharged from the hospital and recovered satisfactorily.
As for subsequent follow-up, it is worth mentioning the need for continued antiepileptic treatment to prevent seizure recurrence, in addition to the importance of medical follow-up to control epilepsy in the long term.

To conclude, therapeutic hypothermia was successful in controlling seizures in this case of super-refractory status epilepticus. This may be a valuable treatment option in cases of EER that do not respond to conventional therapies.
Its implementation requires a multidisciplinary approach involving neurology, intensive care and other professionals to ensure comprehensive patient management.
It is essential to assess the ethical risks and benefits of the procedure and ensure informed consent that respects patient autonomy.
In addition, further research is needed to determine its long-term efficacy and safety.