

## Background

**Peripherally induced movement disorders (PIMDs)** are defined as involuntary, repetitive and patterned movement or abnormal postures triggered by trauma to the peripheral nerves or soft tissue.

Little is known about their pathogenesis and natural course, but complete spontaneous recovery is rare. The different treatments tried are usually ineffective.

## Case Presentation

A 68 year-old man was referred to our Ambulatory Care for Spasticity and Movement Disorders with a 2-years history of dystonic movements of the paravertebral muscles. He suffered a pathological vertebral fracture caused by tumor (Non-Hodgkin lymphoma) replacement of D8 and D9 eleven years before, for which underwent dorsal decompressive laminectomy with removal of the pathological mass.

During the following years he underwent several surgical spinal stabilizations with positioning and removal of different osteosynthesis devices, in order to improve motility and back pain, but with mild and transient benefit.

Almost an year after the last surgery the patient subtly developed **painful involuntary movements of the paraspinal muscles bilaterally**, that progressively worsened over time; different medication, including antispasmodics and analgesics had been tried without effect.

At the time of presentation at our department these movements appeared **subcontinuous, asymmetric and erratic, irregular in amplitude and frequency, associated with pain**. They were exacerbated by postural changes and by touch, and partially attenuated by heat.

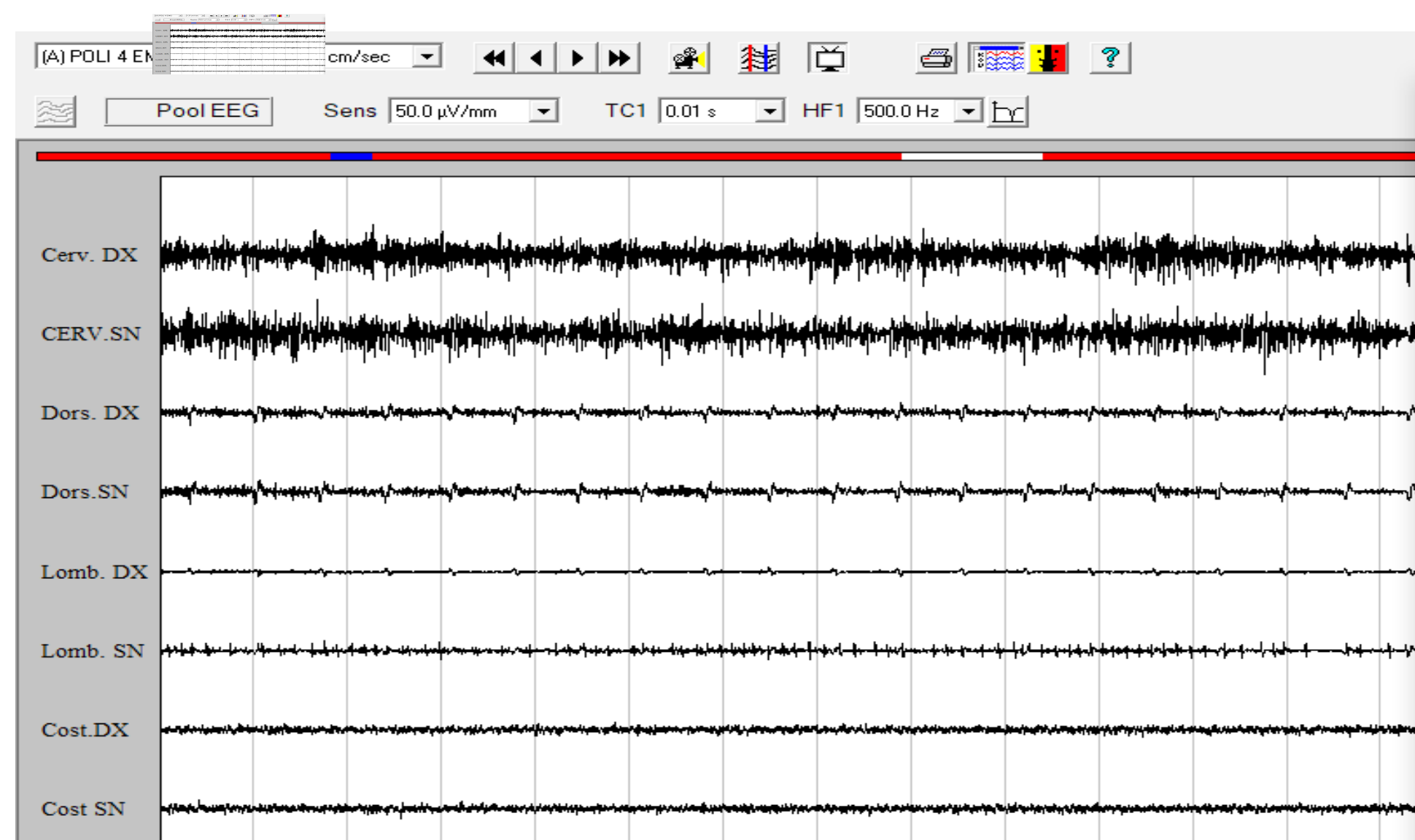
The dynamic video surface electromyographic (sEMG) polygraphy showed irregular polymorphic with the maximum amplitude and frequency in correspondence of dorsal trapezius.

Spinal X-ray and CT scan showed the vertebral spacer between D8 and D10; any other pathological findings were excluded.

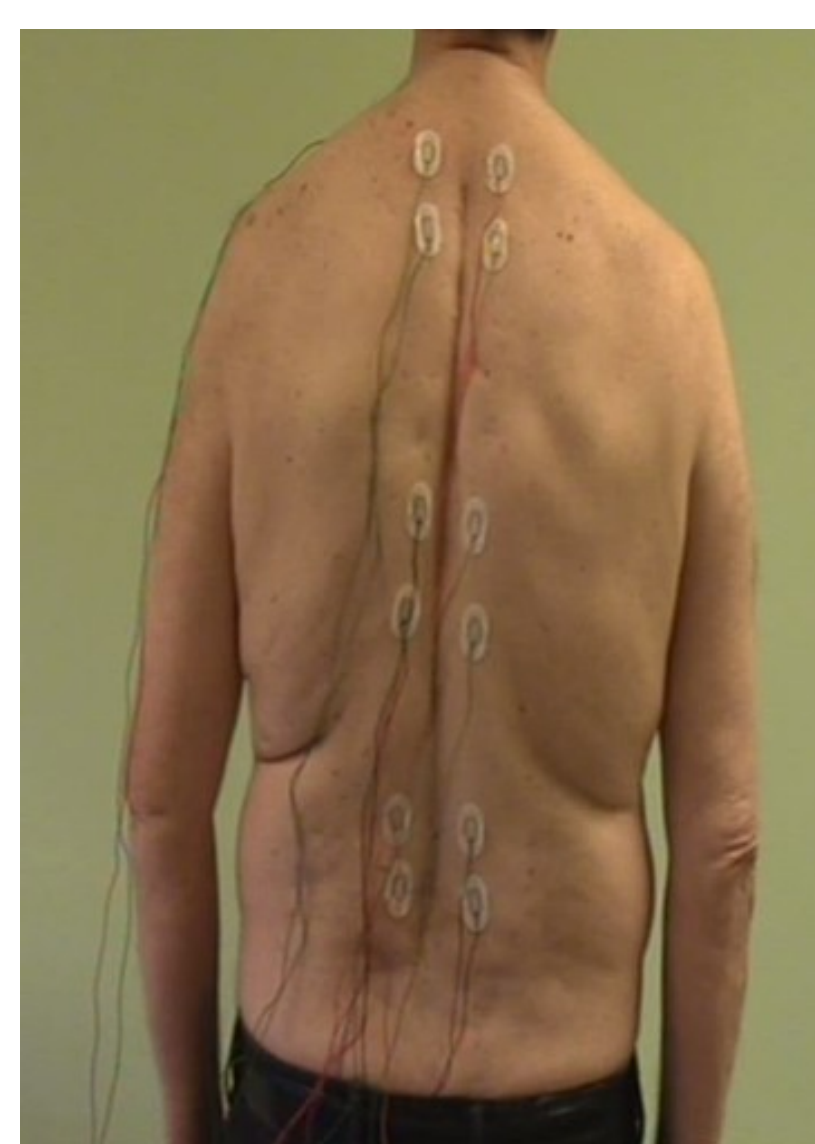
The patient was **treated with botulinum toxin (BTX) type A injections** based on the abnormal sEMG activation pattern, with a good response in a couple of weeks: the movements decreased in frequency and amplitude with significant pain reduction. Three months later a second injections session with a greater dosage of BTX was administered.

In the subsequent months we observed a further remarkable reduction of both the paraspinal involuntary movements (confirmed also by sEMG) and the associated pain. An year later the symptoms were almost disappeared, the pathologic movements were very sporadic, without any further BTX injections.

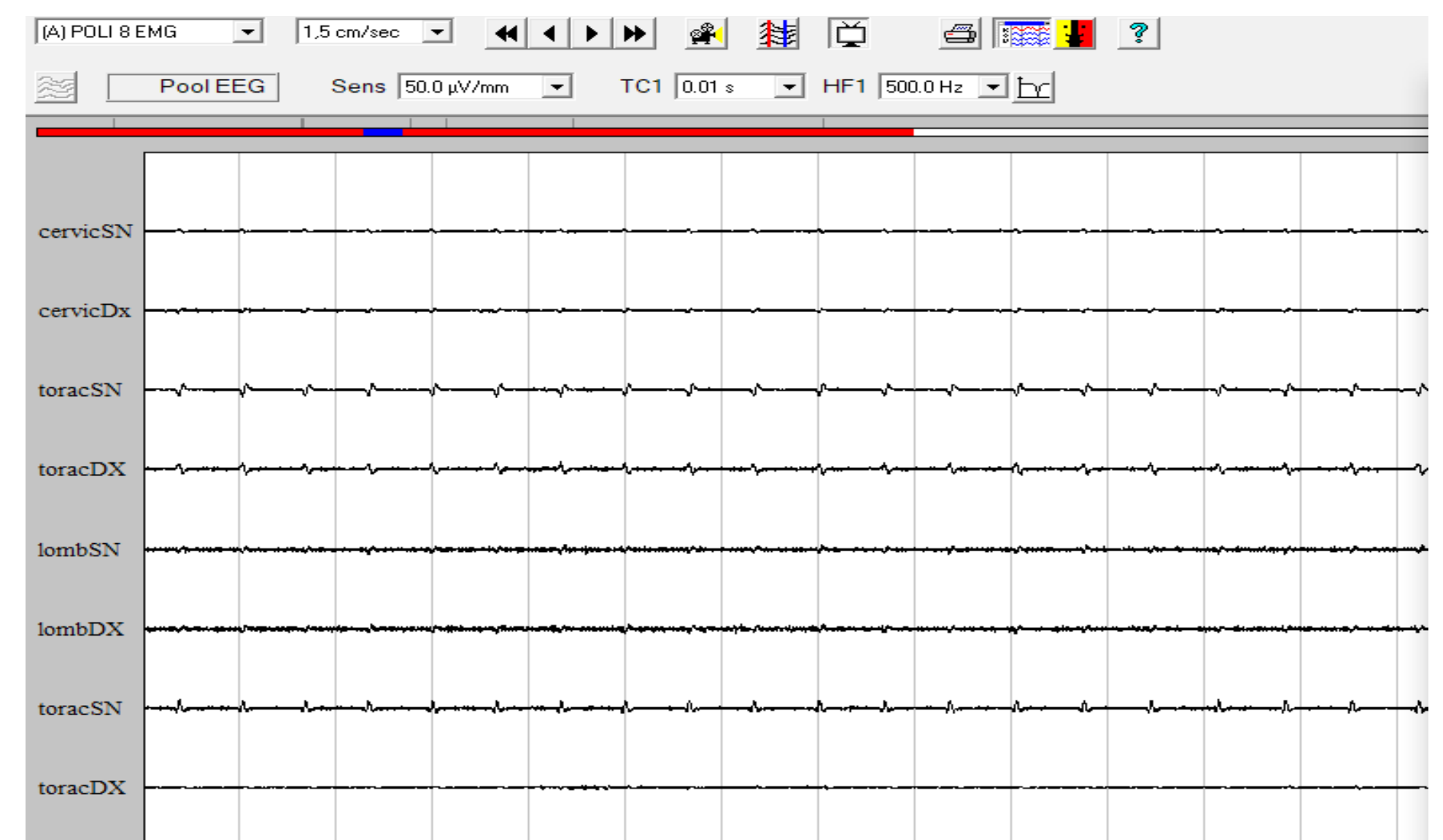
before treatment



Dynamic video surface EMG polygraphy before treatment



after treatment



Dynamic video surface EMG polygraphy after treatment

## Conclusion

To the best of our knowledge this is the first case of PIMD after multiple repetitive surgery. Despite BTX administration for PIMDs is most of cases disappointing, we obtained an excellent and lasting result, suggesting that this treatment should be always tried after an appropriate clinical and instrumental evaluation for the choice of injection points.

## References

- Defazio G and Jankovic J. Does peripheral injury induce dystonia? Moving Along. Milwaukee, WI: Movement Disorders Society. 2010;14:1-9.
- Jankovic J. Can Peripheral Trauma Induce Dystonia and Other Movement Disorders? Yes! Movement Disorders: Official Journal of the Movement Disorder Society. 2001;16 (1): 7-12.
- van Rooijen DE, Geraedts EJ, Marinus J, Jankovic J, and Hilten JJ. Peripheral Trauma and Movement Disorders: A Systematic Review of Reported Cases. Journal of Neurology, Neurosurgery, and Psychiatry. 2011; 82 (8): 892-98.