magnification, and dissected following plane of cleavage between tumor and spinal cord tissue. The histological study of the tumor was recognized as cellular ependymoma.

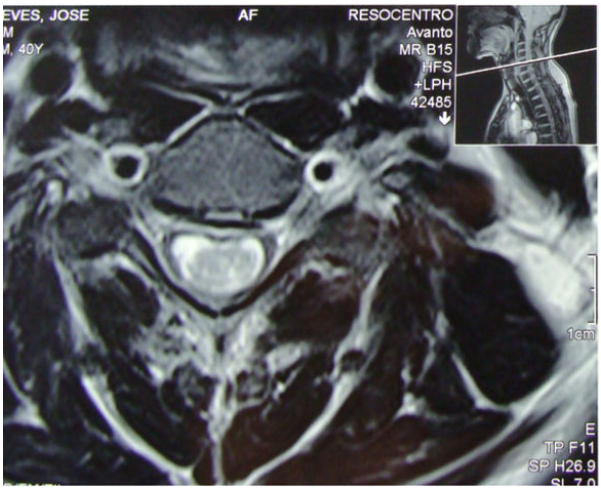

Figure 1B: Preoperative Axial T2 MRI Showing solid ependymoma, which represents about 70 percent of cross-sectional area of the cervical cord (between C4-C5).

Postoperative course

On the first postoperative days he presented hypotonic tetraparesis (grade 1-2) and burning pain in the limbs, as well as loss in the control of both sphincters. Neurological improvement was observed after 30 days of the operation and it was slow and progressive. He received rehabilitation and radiotherapy in the cervical and upper thoracic cord. A postoperative MRI scans (March, 2013) revealed severe hypotrophy of the cervical and thoracic cord, especially from C2 to T5 (Figure 2) and he presented, brachial diparesis (grade 3-4) and spastic paraparesis (grade 3-5). He walked with aid of a cane. This postoperative picture was recorded on videotape.

At present, 56 months after surgery, the motor evaluations in the upper and lower limbs are of grade 3-5. He can walk with assistance or aid of a cane. Throughout the postoperative course, he suffers of moderate to severe central pain (continuous pain, burning pricking, shining or pricks) in limbs and chest His sensory bladder and rectal function is almost normal. He receives pregabalin as treatment for the central pain.

Discussion

This patient confirms that the spinal cord has a great tolerance to chronic injury and by contrast, it can experience functional recovery after decompression or revascularization of the injured zone [5-8]. For example, recently we have published an article in which we present 3 patients with reduced spinal cord to 70% and 3 cm of height(at the C2-C3 level); 40% and 2.5 cm of height (at the T4-T6 level) and 25% and 6 cm of height (at the T6-T7 level). That is, the 3 patient presented dyscomplete transection and all of them had neurological improvement after omental transplantation [8]. Moreover, recently we have transplanted omental tissue to a 45-year-old man who presented reduced cervical cord to 30% and 3 cm of height at the C4-C5 level. At present, three months after surgery, this patient present some signs of neurological improvement as reduction of spasticity in lower limbs, voluntary movement of the fingers, and burning pain in the penile urethra by Foley catheter (unpublished observation).

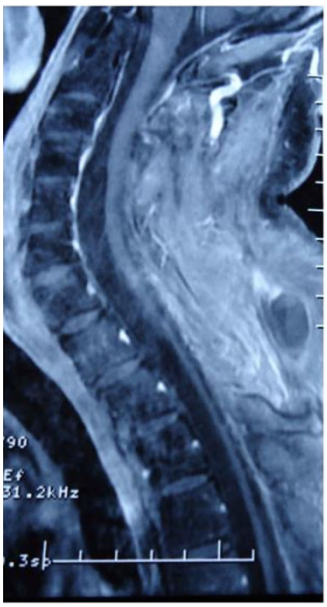

Figure 2: Postoperative T1 MRI with contrast showing severe hypotrophy of the cervical and upper thoracic cord

Our patient reported here confirms that the motor impairment and/or central pain [6,7] both symptoms are indicative of syringomyelia and therefore MRI scans of the spinal cord is indicated for an early diagnosis. Thus, I believe that the first symptoms in this patient were due to syringomyelia located in the lower cervical region and later on, the syrinx extends causing an ascending and descending spinal cord syndrome. Besides this, is very possible that several years later, the syringomyelia was associated with intramedullary ependymoma [3,9].

Moreover, I wish to comment about central pain reported as aching, numbness, burning and tactile hypersensitivity [10,11]. Normally to thalamic and mesencephalic level the neospinothalamic (A-delta fibers) and paleospinothalamic (C-fibers) pathways are separates ; while in the spinal cord, both pathways are intermixed [7,10-12]. In the spinal cord, the syringomyelia interrupt to the decussating neospinothalamic pathways by ischemia and thus, it incites central pain by liberation of paleospinothalamic pathways [6,7,11,12]. By contrast, clinical evidences suggests that the vascular recanalization by means of aspirin [13,14] or revascularization through omental tissue. Of these, neospinothalamic pathways can cause disappearance of central pain, due to the functional recovery of the A-delta fibers [3,7,9,11,12]. Therefore, central pain is a symptom very important in the diagnosis of intramedullary lesions, especially for syringomyelia and/or ependymomas.

Total resection of the ependymoma, when possible, is always recommended as the treatment of choice [1,2,9]. Recurrence is rare following complete excision [15,16]. In our patient, in the presence of the doubt of a complete excision, the patient received radiotherapy;

because the tumor resection followed by radiotherapy is considered the most effective treatment for preventing recurrences [4,15,17].

Finally, I think that the intramedullary ependymoma provoked a slow and progressive expansion of the adjacent spinal cord tissue and therefore, an ischemic injury in the intraparenchymal territory of the arterioles originated from the posterolateral and anterior spinal arteries [6,17,18]. On the contrary, the tumor resection provoked neurological improvement by recanalization of arterioles in the compressed spinal cord in ischemia and ischemic penumbra and later on, because of neuronal and axonal regeneration. Besides this, our clinical case confirms previous experiences that spinal cord has great tolerance to ischemic lesions and its recovery after decompression and /or revascularization.

In summary, I report to a patient with motor impairment and central pain in the limbs since 17-years of age and later, at 42-years, a MRI scans revealed syringobulbia, syringomyelia and cervical ependymoma. Moreover, the patient shows that giant ependymomas can provoke little motor deficits. That is, cervical cord has a large tolerance to ischemic injuries.

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