

**P 1-141**

## **The botulinum toxin injection as a treatment for pain in cancer patients with muscle metastasis**

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### **Introduction**

In cancer patient with muscle metastasis (MM), painful limitation of motion (LOM) is common problem. MM usually treated by radiotherapy (RTx) and other treatments include chemotherapy (CTx), and operation. But complications associated with RTx include fibrosis, skin burn, and muscle contraction. And sometimes maximum dose can't relief pain. MM can produce pain with several mechanisms including muscle stiffness or spasm. Botulinum toxin injection (BTI) is commonly used for muscle stiffness. Recent research had shown that BTI can relief pain by not only reducing muscle spasm but also inhibiting relief of neurotransmitters that regulate pain. To the best of our knowledge there is no study about using BTI for pain in MM. So we report two cases about use of BTI as adjuvant option for pain relief therapy for patients with MM.

### **CASE REPORT**

**Case 1** 39 years old woman with recurrent cervical cancer stage IIb was consulted to us for Lt. pelvic and thigh pain (VAS 9) and painful LOM for 3month. They used medication, L2 root block, but pain continued. MRI and PET have done and shows invasion of abdominal lymph node metastasis to psoas muscle fascia. (figure 1) We did psoas compartment block (PCB) and pain decreased to VAS 3~4. But after 1 week, symptom recurred. So we did BTI to iliacus and psoas (100IU each). After 2weeks, pain decrease to VAS 3 and she could do full extension of Rt. Hip, independent walking. The period of pain free was continued during 9 weeks. **Case 2** 68 years old man with Hepatic cell carcinoma with Rt. Psoas, iliacus and iliac bone metastasis (figure 2) was consulted about intractable Rt. Inguinal area, thigh and buttock pain (VAS 9) and painful LOM. They already did palliative RTx to maximum dose, and also used medication but they didn't work. So we did BTI to iliacus and psoas (100IU each). After 2weeks, he could do full extension of Rt. Hip, independent walking and pain decreases to VAS 3-4. The period of pain free was continued during 3 month.

### **Discussion**

We report BTI could be useful option for MM patients with intractable pain. Pain in MM patient is commonly treated with medication, RTx, surgery and CTx. However these therapies have complications including fibrosis, skin burn, adhesion, muscle contraction and permanent LOM. And sometimes with maximum dose can't relief MM related pain BTI is commonly used for muscle spasm and stiffness by blocking the release of acetylcholine at pre-synaptic nerve terminal. Recent studies noted that, BTI also have a pain relief effect by sensitization of C-fiber nociceptor and decreasing release of neurotransmitters including substance P and calcitonin gene-related peptide. In

## Conclusion

these cases suggest that BTI can be alternative way for MM patients with pain that can't control by commonly used treatment. And further researches are required.

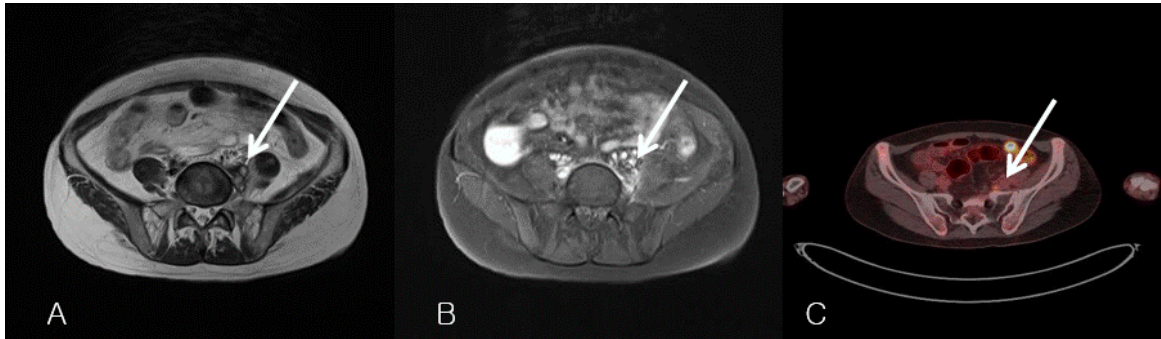


Figure 1. Representing abdominal lymph node metastasis and its invasion to psoas muscle 1A. MRI T2 image, 1B. MRI T1 image, 1C. PET scan image

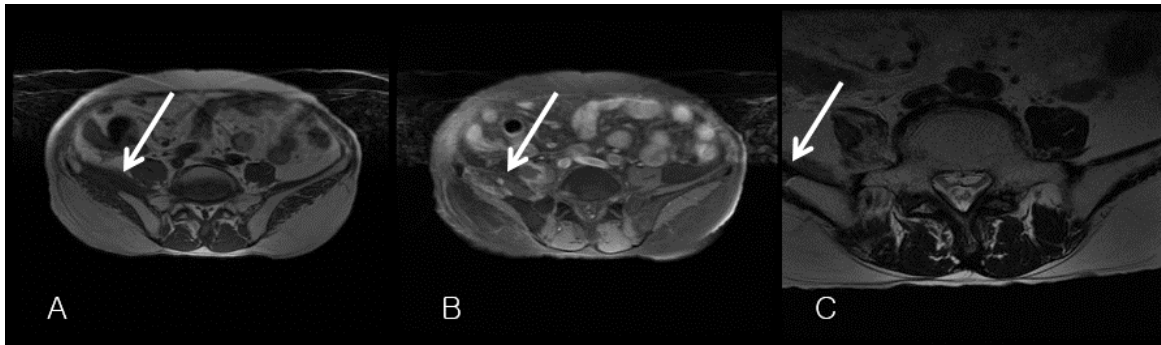


Figure 2. Representing Rt. Psoas, iliacus muscle and iliac bone metastasis 1A. MRI T1 FSE image, 1B. MRI T1 Fat sat FSE image, 1C MRI T2 image