Case Report

Intradural Intramedullary Conus Medullaris Metastasis of Colorectal Adenocarcinoma: A Case Report

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Summary

Spinal cord metastasis is rarely seen. Intramedullary spinal metastasis has been defined between the rates of 0.9-2.1% in the autopsies performed on the cancerous cases. And also intramedullary spinal metastases are defined at a rate of 8.5% in the cases which have metastasis at central nervous system. The male patient, who was at the age of 62, was admitted to our clinic with the complaints of serious back and left leg pain and weakness at the left leg which had begun 15 days before. Low anterior resection + total mesorectal excision + ileostomy were applied to the patient five years ago due to colorectal adenocarcinoma. The carcinoma was reported as adenocarcinoma grade II. Chemotherapy and radiotherapy were applied after postoperative period. Left SLR was positive and 3/5 monoparesis at left leg was determined in the patients neurological examination. Conus medullaris located tumor was determined in the magnetic resonance imaging of the patient. Intradural intramedullary tumor which was infiltrated to the conus medullaris was totally removed with microneurosurgical technique via Th12-L1-L2 total laminectomy. Th11-L3 posterior instrumentation and fusion were added because of expansive laminectomy and L1 corpus involvement of the tumor. The histopathological examination was reported as colorectal adenocarcinoma metastasis. In this manuscript we report a colorectal adenocarcinoma metastasis to the conus medullaris for the first time in the literature.

Key words: Colorectal adenocarcinoma, conus medullaris, metastasis, surgery

Kolorektal Adenokarsinomun İntradural İntramedüller Konus Medüllaris Metastazı: Olgu Sunumu

Özet


Anahtar Kelimeler: Kolorektal adenokarsinom, konus medullaris, metastaz, cerrahi
INTRODUCTION

Current developments in the therapy of the primer malign diseases are increased the occurance of metastasis by prolonging the life time of the patients. Although invasion of the tumors to the vertebra and epidural distance are frequently seen, invasion of the spinal cord is rarely seen. When intradural metastasis occur a fast growing neurological deficit develops and the expected life times of the patients are so limited\(^{(2,3,5)}\).

Intramedullary metastasis related to colorectal cancers is rarely seen and only 8 cases have been demonstrated in the English literature\(^{(4)}\). Because surgery plays a small role in intramedullary metastasis, radiation and corticosteroid therapy were recommended\(^{(16,20)}\).

In this manuscript we report a case of colorectal adenocarcinoma metastasis to the conus medularis which was located intradural intramedullary. This rarely seen case is reported in order to emphasize the importance of the surgical therapy and the increase in the life quality of the patient after total surgical excision.

CASE PRESENTATION

A-62-year-old male patient was admitted to our clinic with the complaints of serious waist pain and left leg pain, left leg weakness and difficulty in walking. He had progressive monoparesis at the left leg which was started 15 days before hospitalization. The patient was operated 30 years ago with the cyst hydatid diagnosis and right nephrectomy and a double J catheter to the left kidney was applied due to the altitude of ure-creatine. Also the patient was operated 5 years ago with the diagnosis of colorectal adenocarcinoma and low anterior resection + total mesorectal excision + ileostomy were done. The histopathological examination was reported as adenocarcinoma grade II. The patient was also received chemotherapy and radiotherapy in the postoperative period. In the neurological examination of the patient, left SLR was positive at 60 degree and monoparesis at the left leg was achieved. Hyphoestesis under the level of L1 dermatoma was also determined. In lumbar magnetic resonance imaging (MRI) a tumor which was caused expansion in spinal cord at the level of L1-2 was determined. The tumor was isointense on T1, hypointense heterogenic on T2 and was contrast enhanced after intravenous contrast material. Sclerosis secondary to radiotherapy was determined in the other lumbar vertebraes especially at L5 and S1-S2 vertebraes (Figure 1,2,3). Colon carcinoma reoccurrence in abdominal computerize tomography (CT) was not determined. L1 corpus involvement was also seen at bone scintigraphy (Figure 4). Conus medullaris located intradural intramedullary tumor was excised totally with Th12-L1-2 total laminectomy and biopsy from L1 vertebra corpus was taken. Posterior instrumentation between Th11-L3 was applied. The pathology was reported as colorectal adenocarcinoma metastasis (Figure 5). The pain of the patient decreased in a significant way during the postoperative period. The patient’s monoparesis and hypoesthesia were improved after the operation. The patient was discharged from the hospital after the consultation with medical oncology for further treatment strategia. The patient discharged from the hospital after oncology consultation and come his routine follow-up examination for two years after surgery. After two years the patient give up policlinic controls.
Figure 1: Left, Preoperative T2-weighted MRI scan showing defined mixed intensity lesion at T12-L2. Right, Sagittal gadolinium enhanced T1-weighted MRI scan showing the contrast enhancement of the lesion which was located at L1–L2 (Black arrows). Hyperintense lesions on T1 and T2-weighted sagittal MRI sections especially at L5, S1 and S2 vertabrae are sclerosis due to previously radiotherapy.

Figure 2: Axial T2-weighted MRI of the thoracolumbar spine showing an intradural intramedullary lesion at the level of the conus medullaris (Black arrow).
**Figure 3:** L1 corpus and left pedicle involvement can be seen at axial T2 weighted MRI (Black arrow).

**Figure 4:** Radionuclid bone scintigraphy image which shows metastatic lesion at L1 vertebra. Other bone structures are normal without metastasis.
DISCUSSION

Spinal cord metastasis are rarely seen. Intramedullary spinal metastasis rate was determined as 0.9-2.1% throughout all the autopsies of the cancer cases. Intramedullary spinal metastasis are constitute 8.5% of all cases which have CNS metastasis\(^3\),\(^5\). The frequency of the intramedullary metastasis is 3.9% in the subsequent researches and its reason may be the invention of MRI and the current developments in cancer therapy\(^10\). The reason for the lower incidence of the intramedullary spinal metastasis may be related to the ignorance of the spinal cord examination through a rutin autopsy. On the other hand, brain metastasis have been found at a rate of approximately 20% in the cancer autopsies\(^1\).

It is believed that arterial invasion is the most common mechanism of the intramedullary spinal metastasis. Pulmonary lesions are nearly characteristic in both intracranial and intramedullary metastasis\(^7\). The difference between brain metastasis and intramedullary metastasis can be explained with the difference of arterial blood flow and venous drainage between the brain and spinal cord\(^4\),\(^17\). The intradural invasion can be occurred by direct invasion of the dorsal root or as a result of venous invasion by Batson plexus\(^2\). Another way in invasion can be seen by perineural lymphatic channel in spinal nerve roots and transdural invasion\(^15\),\(^21\).

The most frequent origin of the intramedullary spinal cord metastasis are lung cancers and especially the small cell carcinoma\(^2\),\(^7\),\(^16\). The other types with smaller rates of frequency are, breast cancer, melanoma, renal cell carcinoma and lymphoma\(^2\),\(^7\). Colorectal adenocarcinoma originated intramedullary spinal cord metastases are rarely seen and have been reported for only 9 times in the English literature\(^11\),\(^16\)-\(^18\),\(^22\). Colorectal adenocarcinoma originated intramedullary spinal cord metastases are seen at a rate of 3%\(^5\). In a recent research, the spinal levels of the cases occurred metastasis on spinal cord are 42% for cervical, 26% for throracic and 32% for lumbar segments\(^12\).

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**Figure 5:** Original photomicrograph of the lesion with atipic glandular and cribriform patterns which was reported as adenocarcinoma metastasis in fibrous tissue (H&E x 100).
Radiotherapy and chemotherapy are not indicated for these patients. Only three of previously reported patients were operated others were refused the therapy and died after a short time period from diagnosis.

The exact diagnosis can be difficult even the primer tumor is known because clinic findings cannot help separating intramedullary spinal cord metastasis from paraneoplastic necrotizing myelopathy. The possibility of the occurrence of the intramedullary spinal cord metastasis should be keep in mind a patient with neurological deficit which has a malign tumor. The occurrence of neurological deficit, remind us the possibility of a spinal tumor in this case. The fast progress of the symptoms helps to separate intramedullary spinal cord metastasis from primer intramedullary tumors. The symptoms of the primer intramedullary tumors slowly develops because the growing of the tumor is tended to be slow. But in the metastasis cases, the tumor rapidly grows and the symptoms develop accordingly(2,16). The symptoms in the presented case were rapidly developed. The period between the beginning of first symptoms and the development of the neurological deficits is less than one month in the ¾ of the reported patients(7). If a spinal lesion is suspected in patients which have malignancy history, spinal MRI with gadolinium should be taken. Epidural or intradural lesions can be defined by MRI. Intradural extramedullary tumors are generally compresses the epidural adipose tissue or make expansion in the subarachnoidial region and compresses the spinal cord(13). Bening neoplasms are generally expanded the intervertebral foramen. Tumor is usually more isointense than the spinal cord in the T1 dominated metastatic cases and nodular involvement is seen after the contrast material. Intramedullary spinal cord lesions cause expansion in the spinal cord. If there exists a cystic formation it gives a different signal from BOS or primer neoplasm. The edema in the hyperintensity area can be evaluated in the T2-weighted MRI in metastatic neoplasms(6). Many authors recommended radiotherapy for the intramedullary spinal cord metastasis(4,7). The surgical removal of the tumor has been rarely taken into consideration. Tumor metastasis giving positive replies to the radiotherapy like lymphoma, breast cancer, and small cell carcinoma. A great majority of the tumors in the former series consisted of these type of tumors. 5 years life expectancy is 8% for the colon cancer patients in terminal period(14). If there exist intramedullary spinal cord metastasis besides colon cancer, the life span of these patients rejecting the therapy is less than 1 month(19). Some authors also believes that radiotherapy, chemotherapy and surgical therapy does not provide a benefit in the patients with intramedullary spinal cord metastasis(9). But in our case, early diagnosis and the removal of the tumor with the appropriate microsurgical technique improved the life quality and prognosis. As intracranial metastasis, intramedullary spinal cord metastasis also provides possibility for the gross total removal by giving clivage from peripheral tissue(2,5). Hammerberg determined 74% neurological improvement in the cases which have spinal metastasis after surgery with development in the patient's life quality(8). The first option should be the removal of the tumor with microsurgical technique in the patients with unifocal intramedullary metastasis which are resistant to radiotherapy. More comfortable and trustable facilities have been provided to the surgeon due to the developments in instrumentation and stabilization.

In this case conus medullaris located tumor was removed totally with microneurosurgical technique. Because extensive total laminectomy was applied during the surgery, long segment posterior fixation and posterior fusion were added to surgery.
We are presenting colorectal adenocarcinoma originated metastasis to the conus medullaris for the first time in the literature with this case.

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