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A clinical case

Case report: Intramedullary tuberculoma of the thoracic spinal cord

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*** Corresponding author:** Sholpan Kauynbekova,
E-mail: ms.sho1982@mail.ru

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Sholpan Kauynbekova [1*], Gabit Makhambaev [2], Berik Tuleubayev [3], Amina Koshanova [4], Veronika Abzalova [5]

[1] Associate professor of the Department of Surgical Diseases, Karaganda Medical University, Multidisciplinary Hospital named after Professor Kh.Zh. Makazhanov, Karaganda, Kazakhstan
[2] Associate professor of the Department of Surgical Diseases, Karaganda Medical University, Multidisciplinary Hospital named after Professor Kh.Zh. Makazhanov, Karaganda, Kazakhstan
[3] Head of Department of Surgery, Karaganda Medical University; Multidisciplinary Hospital named after Professor Kh.Zh. Makazhanov, Karaganda, Kazakhstan
[4] Associate professor of the Department of Surgical Diseases, Karaganda Medical University, Multidisciplinary Hospital named after Professor Kh.Zh. Makazhanov, Karaganda, Kazakhstan
[5] PhD-student at the Department of Surgery, Karaganda Medical University, Multidisciplinary Hospital named after Professor Kh.Zh. Makazhanov, Karaganda, Kazakhstan

Abstract

Tuberculosis is an absolutely controllable infectious disease. At the same time, prevention, diagnosis and treatment of tuberculosis in Kazakhstan are absolutely free and fully financed by the state. Central nervous system damage is often accompanied by severe neurological deficit. Untimely diagnosis and treatment, as well as unfavorable prognosis of central nervous system tuberculosis determine the constant interest in this problem. This work reflects a rare lesion of the central nervous system on the background of disseminated pulmonary tuberculosis, with severe neurological deficit.

This article describes a case after 17 years after pulmonary tuberculosis, the process spread to the central nervous system and manifested severe neurologic deficits. On admission to the neurosurgical department, the patient had inferior paraparesis and neurogenic pelvic dysfunction. Timely surgical treatment with the use of modern technologies, such as intraoperative neuromonitoring, made it possible to avoid complications in the form of irreversible paralysis of the patient. The neurological deficit regressed significantly on the background of the combination of surgical and conservative treatment.

Keywords: extrapulmonary tuberculosis, tuberculoma, combined treatment.

1. Introduction

Tuberculosis is a disease affecting various organs and body systems. According to the World Health Organization, by 2021, about 8 million people in the world will be infected with tuberculosis annually, 15% of which are extrapulmonary forms [1]. Central nervous system (CNS) tuberculosis occurs in 5% of adult patients and 30% of children. About 10% of all patients with tuberculosis affect the central nervous system. Tuberculosis presenting as an intramedullary lesion of the spinal cord is rare, approximately 1-2 cases per 100,000 patients with tuberculosis [2-5]. According to the authors, brain tuberculosis predominates over intramedullary tuberculomas, the ratio is 42:1 cases. In 72% percent intramedullary tuberculomas are located in the thoracic spine [4].

Nervous system pathology often accompanies tuberculosis but is rarely diagnosed for many reasons.

Non-specificity of clinical symptoms, which may look like any volumetric mass of the spinal cord. Normal blood and liquor values, absence of fever, negative blood TB tests may be the reason for not diagnosing spinal cord tuberculoma in a timely manner.

Intramedullary tuberculoma mimics any other intramedullary mass on radiologic diagnosis. A tuberculoma may appear as a hypointense or isointense mass, with contrast ring enhancement, features characteristic of other pathologies as well. It is often difficult to distinguish from a tumor or abscess [4-8].

Even if patients are not dangerous from the point of view of infection of others (closed form of tuberculosis without detection of mycobacteria in sputum), we should not forget that the progression of the process leads to a violation of the functional component of the affected organ, which accordingly leads to a decrease in the patient's ability to work, quality of life, disability and, in the worst case, death of the patient [4,5].

2. Clinical Case Description

We report on this rare case of intramedullary tuberculoma registered in the Multidisciplinary Hospital named after Professor Kh.Zh. Makazhanov, which developed as a result of disseminated pulmonary tuberculosis, secondary serous tuberculous meningitis, leading to lower paraparesis with neurogenic dysfunction of the pelvic organs. Informed consent was obtained from the patient for the use of clinical data in this scientific publication.

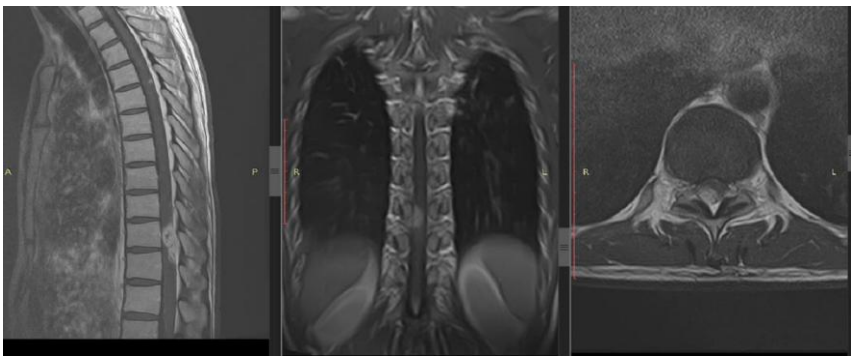

Figure 1 - Contrast-enhanced MRI of the thoracic spine revealing an intradural extramedullary lesion at the Th10–Th11 level

Patient F. born in 1982. Admitted to the department with complaints of severe limitation of movement in the lower limbs, dysfunction of the pelvic organs.

Pulmonary tuberculosis was first detected in 2003, and received a full course of treatment with a favorable outcome. He was registered at the dispensary and regularly underwent examinations. The review X-ray from February 2019 shows residual changes after tuberculosis. It was removed from the register.

Since 2020, he began to notice increasing weakness in the extremities, followed by a loss of control over the function of the pelvic organs, underwent an magnetic resonance imaging (MRI) of the thoracic spine with contrast, where the presence of intradural and extracramedullary spinal cord formation at the level of Th10-Th11 vertebrae was revealed (Figure 1).

Condition at the time of admission to the hospital: complaints of weakness of both legs, inability to walk, urinary incontinence, delay.

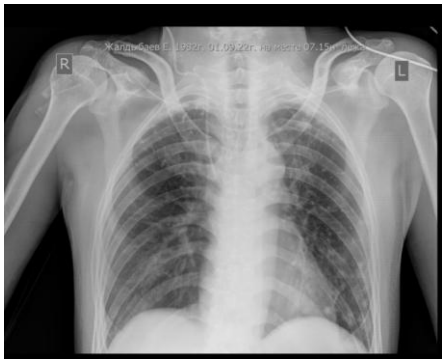

Figure 2 - Chest X-ray 01.09.2022Pneumosclerosis of the lungs, post-tuberculosis changes in the left and right lungs

Neurological status: Conscious, adequate, oriented, markedly asthenic. Pupils OD=OS. Cranial nerve function is normal. Lower paraparesis 2 points in the right leg, 3 points in the left leg. Muscle tone is decreased in both legs. Tendon reflexes are decreased in the legs. Cannot stand in the Romberg position. Performs the finger-to-nose test. Meningeal signs are negative. Foot signs are negative. Neurogenic dysfunction of the pelvic organs.

Methods: After preoperative preparation, an operation was performed: Laminoplasty Th 10-11. Microsurgical removal of an intramedullary tumor with intraoperative neuromonitoring (Figure 3-5).

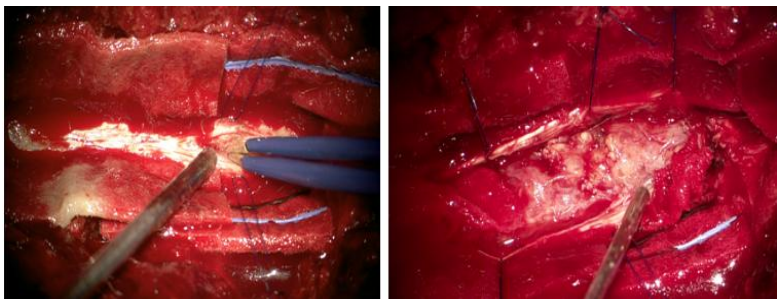

Figure 3 - Opening of the dura mater, tumor growth is infiltrative

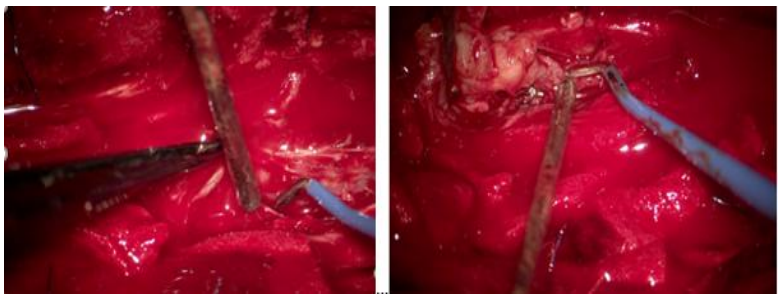

Figure 4 - Using a desector (insulated to the cutting edge), the formation was separated from the spinal cord with continuous unipolar stimulation, which allows for minimal damage to the spinal cord

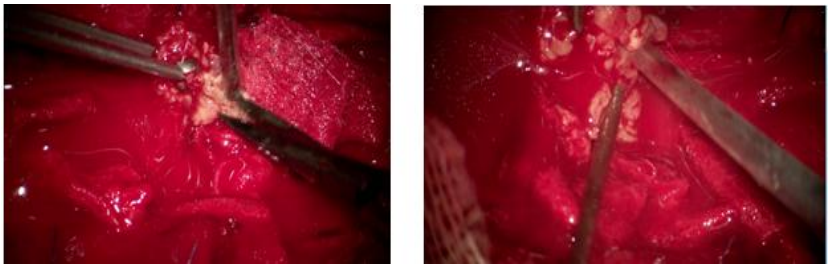

Figure 5 - Further removal by biting and using ultrasonic suction

Postoperative and follow-up MRI scans at 2 months and 2 years after laminoplasty and removal of the intramedullary lesion at the Th10–Th11 level (Figures 6–8).

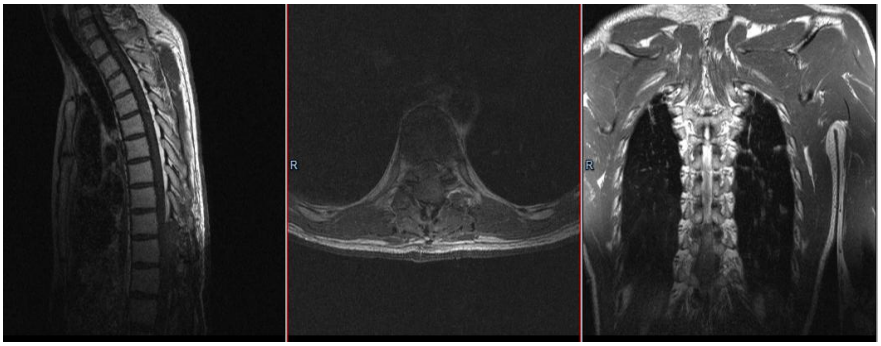

Figure 6. MRI control after surgery (condition after laminoplasty and removal of intramedullary formation at the level of the bodies of the Th10 and Th11 vertebrae)

Condition at discharge: neurological status at preoperative level.

Neurogenic dysfunction of pelvic organs persists.

Histological conclusion: Specific granulomatous inflammation (exclude tuberculosis).

Postoperatively, the patient was referred for consultation with a phthisiologist. Based on the clinical findings, continued anti-tuberculosis therapy was advised at the regional tuberculosis dispensary.

Today the patient reports weakness in the legs. Muscle strength in the legs is 4 points, neurogenic dysfunction of the pelvic organs has regressed.

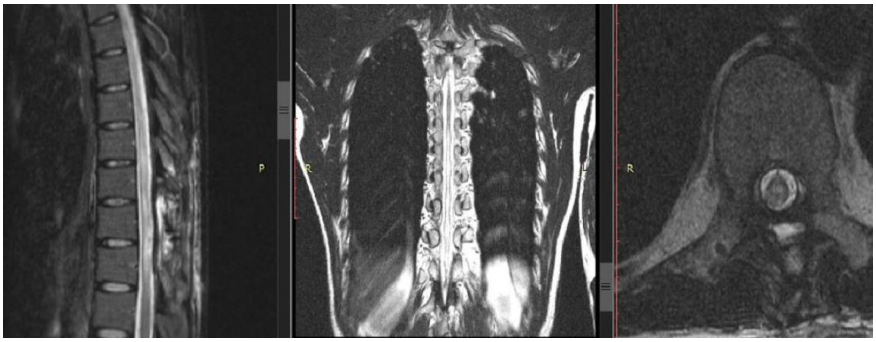

Figure 7 - MRI control 2 months after surgery (condition after laminoplasty and removal of intramedullary formation at the level of the bodies of the TH10 and TH11 vertebrae)

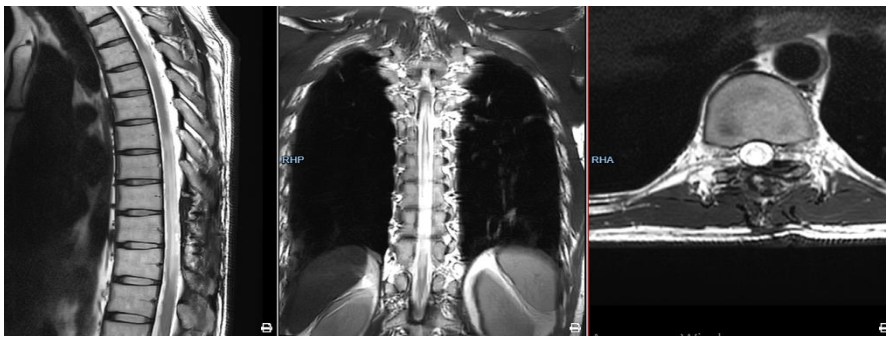

Figure 8 - MRI control 2 years after surgery

3. Discussion

Based on the patient's catamnesis, the result of the histological conclusion was expected. In the described case, the tuberculoma is a consequence of cerebrospinal fluid contamination. Most of these tuberculosis are treated conservatively, excluding cases with severe spinal cord compression and neurological deficiency requiring early surgical intervention [7,9,10].

Li H. et al. described a case series of 23 patients, 10 of whom had verified thoracic spinal tuberculoma, 6 cervical, 3 cervicothoracic and 1 thoracolumbar, and three patients had multiple brain lesions. Nine patients had a history of confirmed tuberculosis. Nineteen patients had sensorimotor deficits depending on the level of the lesion. Surgical treatment was performed in 21 patients, and restoration of sensorimotor function was achieved in 17 patients [11].

Guirado V.M. et al. describe a case of tuberculoma of the cervicothoracic region C1-Th1 with lower paraparesis and urinary retention; microsurgical resection was performed followed by anti-tuberculosis therapy; recovery took 6 months [12]. Ramdurg S.R. et al. described a series of cases of spinal tuberculomas: 7 dorsal, 5 cervical, 2 cervicospinal, 1 dorsal-lumbar. Sensorimotor deficit was detected in 14 of them. In 5 patients, the diagnosis of tuberculosis in the anamnesis was confirmed. Indications for surgery were given to 12 patients, in 9 of whom significant recovery of lost functions was observed [13].

Abhai S. et al. describe a case of cervical tuberculoma with gradually increasing weakness in all limbs. The patient has a confirmed case of pulmonary tuberculosis with an outcome of tuberculous meningitis, has been on anti-tuberculosis antibiotic therapy for the last 6 months, weakness in the extremities continued to increase. The patient underwent an MRI of the cervical spine, where an intramedullary ring was found, and on the next MRI there was a clear increase in diameter. Total excision of the spinal tuberculoma was performed. Duroplasty was performed. After 6 months, the authors describe significant improvement [14].

Prithvi Varghese et al. reported a case of cervical tuberculoma in a 49-year-old woman who came to the clinic with complaints of aching pain in the upper limbs for 1 week. There was no history of serious diseases. An MRI scan showed an intramedullary mass and enlarged mediastinal lymph nodes. Due to the suspicion of a neoplasm, the patient was prescribed corticosteroids. An insignificant effect was achieved, and it was decided to perform a fine-needle biopsy of the mediastinal nodes, which suggested granulomatous inflammation. The patient was prescribed a course of rifampicin and isoniazid, after 2 months there was complete relief of symptoms [15]. However, one should not expect that anti-tuberculosis drug therapy will eliminate the need for surgical treatment. A review of the presented literature showed that surgical treatment of intramedullary tuberculoma is an effective treatment method and can achieve good results.

In the postoperative period, patients continue to receive anti-tuberculosis therapy, which allows achieving better clinical results.

4. Conclusions

The results of our surgical intervention together with drug treatment exceeded all expectations. At the control examination, the patient demonstrated regression of lower paraparesis from a deep level to a moderate one (the patient moves independently with the help of a cane) with complete restoration of the function of the pelvic organs. These results were achieved 2 months after the surgery.

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Conflicts of Interest: The authors declare no conflicts of interest.

References

1. World Health Organization. Global tuberculosis report 2021 [Cited 28 Dec 2024]. Available from URL: https://www.who.int/publications/i/item/9789240037021

2. Iftikhar, S., Ijaz, N., Iftikhar, S., & Khan, S. (2022). Intramedullary spinal tuberculoma: an uncommon presentation of a common disorder. *Cureus*, 14(9). https://doi.org/10.7759/cureus.28761

3. Chandramouleeswaran, V., Philo, H. P., Balasubramaniam, D., & Ramachandran, R. (2017). A lengthy primary intramedullary tuberculoma of the spinal cord extending from C4 to D8: A case report. *Indian Journal of Tuberculosis*, 64(1), 50-53. doi: https://doi.org/10.1016/j.ijtb.2015.07.012

4. Pradeep, N., Ghorpade, R., Naik, R., & Malur, P. R. (2017). Intra-medullary tuberculomas: Case series. *International journal of spine surgery*, 11(1). https://doi.org/10.14444/4002

5. Liu, Y. D., Wang, F. Y., Xu, J. M., Guan, Y., & Guan, H. (2010). Intramedullary thoracic tuberculoma. *Spinal cord*, 48(1), 80-82. https://doi.org/10.1038/sc.2009.58

6. Sardana, V., & Shringi, P. (2019). Intramedullary tuberculoma of the spinal cord, clinical features & imaging: possibility of early diagnosis with imaging? *The Indian Journal of Tuberculosis*, 67(3), 346-348. https://doi.org/10.1016/j.ijtb.2019.03.007

7. Mishra, S. S., Das, D., Das, S., Mohanta, I., & Tripathy, S. R. (2015). Spinal cord compression due to primary intramedullary tuberculoma of the spinal cord presenting as paraplegia: A case report and literature review. *Surgical Neurology International*, 6, 42. https://doi.org/10.4103/2152-7806.15384

8. Kangabam, B., Amataleima, T., Amitkumar, M., & Umesh, T. (2021). Intradural extramedullary tuberculoma of the thoracic spine–A rare case report of paraparesis. *Surgical Neurology International*, 12, 136. https://doi.org/10.25259/SNI_197_2021

9. Wakhlu, A., Srivastava, D., & Wakhlu, A. (2015). Spinal intramedullary tuberculoma: a rare cause of backache. *The Journal of Rheumatology*, 42(11), 2166-2167. https://doi.org/10.3899/jrheum.150450

10. Wang, G. C., & Wu, S. W. (2017). Spinal intramedullary tuberculoma following pulmonary tuberculosis: a case report and literature review. *Medicine*, 96(49), e8673. https://doi.org/10.1097/MD.0000000000008673

11. Li, H., Liu, W., & You, C. (2012). Central nervous system tuberculoma. *Journal of Clinical Neuroscience*, 19(5), 691-695. https://doi.org/10.1016/j.jocn.2011.05.045

12. Guirado, V. M., Welling, L. C., Meluzzi, A., Santos, M. E., Figueiredo, E. G., Taricco, M. A., & Teixeira, M. J. (2011). Intramedullary granuloma suggestive of tuberculoma. *Arquivos de neuro-psiquiatria*, 69, 848-849. https://doi.org/10.1590/S0004-282X2011000600028

13. Ramdurg, S. R., Gupta, D. K., Suri, A., Sharma, B. S., & Mahapatra, A. K. (2009). Spinal intramedullary tuberculosis: a series of 15 cases. *Clinical neurology and neurosurgery*, 111(2), 115-118. https://doi.org/10.1016/j.clineuro.2008.09.029

14. Singh A. Singh Bhatoe H. Shachi. (2021) Surgical management of intramedullary tuberculoma: a case report and review of literature. *Hospital Mohali India*. 10(5), 37-39 : https://doi.org/10.36106/gjra

15. Varghese, P., Jalal, M. J. A., Kandathil, J. C., & Mathew, I. L. (2017). Spinal intramedullary tuberculosis. *The Surgery Journal*, 3(02), e53-e57. https://doi.org/10.1055/s-0037-1599823

Клиникалық жағдай: Кеуде бөлімі жұлынының интрамедуллярлық туберкуломасы

Қауынбекова Ш. [1], Махамбаев Г. [2], Тулеубаев Б. [3], Кошанова А. [4], Абзалова В. [5]

[1] Қарағанды медицина университетінің хирургиялық аурулар кафедрасының профессор ассистенті, Профессор Х.Ж Мақажанов атындағы көпбейінді аурухана, Қарағанды, Қазақстан

[2] Хирургиялық аурулар кафедрасының профессор ассистенті, Қарағанды медицина университеті, Профессор Х.Ж Мақажанов атындағы көпбейінді аурухана, Қарағанды, Қазақстан

[3] Хирургиялық аурулар кафедрасының меңгерушісі, Қарағанды медицина университеті, Профессор Х.Ж Мақажанов атындағы көпбейінді аурухана, Қарағанды, Қазақстан

[4] Хирургиялық аурулар кафедрасының ассоциирлеген профессоры, Қарағанды медицина университеті, Профессор Х.Ж Мақажанов атындағы көпбейінді аурухана, Қарағанды, Қазақстан

[5] Хирургиялық аурулар кафедрасының докторанты, Қарағанды медицина университеті, Профессор Х.Ж Мақажанов атындағы көпбейінді аурухана, Қарағанды, Қазақстан

Түйіндеме

Туберкулез – толық бақылауға болатын жұқпалы ауру. Қазақстанда туберкулездің алдын алу, диагностикалау және емдеу тегін және мемлекет тарапынан толығымен қаржыландырылады. Орталық жүйке жүйесінің зақымдануы жиі ауыр неврологиялық тапшылықпен бірге жүреді. Кеш диагностика және емдеу, сондай-ақ орталық жүйке жүйесінің туберкулезінің қолайсыз болжамы осы мәселеге тұрақты қызығушылықты танытады. Бұл жұмыста өкпе туберкулезінен тараған ауыр неврологиялық тапшылыққа әкелген орталық жүйке жүйесінің сирек кездесетін жағдайы сипатталған.

Мақалада өкпе туберкулезімен ауырғаннан кейін 17 жылдан соң орталық жүйке жүйесіне таралып, ауыр неврологиялық тапшылық түрінде көрінген жағдай сипатталған. Нейрохирургиялық бөлімшеге түскен кезде науқаста төменгі парапарез және жамбас мүшелерінің нейрогендік дисфункциясы болған. Операция ішілік нейромониторинг әдісі сияқты заманауи технологияларды пайдалана отырып, уақтылы хирургиялық емдеу науқастың қайтымсыз сал ауруы түріндегі асқынуларды алдын алуға көмектесті. Хирургиялық және консервативті емнің біріктіру арқасында науқаста неврологиялық тапшылық айтарлықтай төмендеді.

Түйін сөздер: өкпеден тыс туберкулез, туберкулема, аралас емдеу.

Клинический случай: Интрамедуллярная туберкулома грудного отдела спинного мозга

Қауынбекова Ш. [1], Махамбаев Г. [2], Тулеубаев Б. [3], Кошанова А. [4], Абзалова В. [5]

[1] Ассистент профессора кафедры хирургических болезней, Карагандинский медицинский университет, Многопрофильная больница имени профессора Х.Ж. Макажанова, Караганда, Казахстан

[2] Ассистент профессора кафедры хирургических болезней, Карагандинский медицинский университет, Многопрофильная больница имени профессора Х.Ж. Макажанова, Караганда, Казахстан

[3] Заведующий хирургических болезней, Карагандинский медицинский университет, Многопрофильная больница имени профессора Х.Ж. Макажанова, Караганда, Казахстан

[4] Ассоциированный профессор кафедры хирургических болезней, Карагандинский медицинский университет, Многопрофильная больница имени профессора Х.Ж. Макажанова, Караганда, Казахстан

[5] PhD-докторант кафедры хирургических болезней, Карагандинский медицинский университет, Многопрофильная больница имени профессора Х.Ж. Макажанова, Караганда, Казахстан

Резюме

Туберкулез является абсолютно контролируемым инфекционным заболеванием. В то же время в Казахстане профилактика, диагностика и лечение туберкулеза абсолютно бесплатны и полностью финансируются государством. Поражение центральной нервной системы часто сопровождается тяжелым неврологическим дефицитом. Несвоевременная диагностика и лечение, а также неблагоприятный прогноз туберкулеза центральной нервной системы определяют постоянный интерес к этой проблеме. Данная работа отражает редкое поражение центральной нервной системы на фоне диссеминированного туберкулеза легких, с тяжелым неврологическим дефицитом.

В статье описан случай, когда через 17 лет после перенесенного туберкулеза легких он распространился на центральную нервную систему и проявился в виде тяжелого неврологического дефицита. У пациента при поступлении в нейрохирургическое отделение наблюдался нижний парапарез и нейрогенная дисфункция органов малого таза. Своевременно проведенное оперативное лечение с применением современных технологии как, интраоперационный нейромониторинг помогли избежать осложнения в виде необратимой парализации пациента. Неврологический дефицит значительно регрессировал на фоне сочетания хирургического и консервативного лечения.

Ключевые слова: внелегочный туберкулез, туберкулома, комбинированное лечение.