C3 LATERAL MASS OSTEOBLASTOMA IN A CHILD: CLINICAL CASE AND LITERATURE REVIEW

Akhmed Berun
SSSMU

Aclinical case description is provided. Level of evidence — V. Surgical treatment ofC3 vertebra lateral mass osteoblastoma was performed in a 6-year-old child. The follow — up period was 9 months after radical surgery with block resection of the tumor and local screw fixation of the C2-C3 vertebrae. The principles of differential diagnosisofsmall (1.5 cm) osteoblastoma with non-specific clinical and radiological symptoms are described.

Key words: benign bone-forming tumors, osteoblastoma, cervical spine tumors, cervical spondylosynthesis in children.

ПPrimary bone tumors of the spine account for 0.4 % of all neoplasms of various localization and 4.2 % of all neoplasms of the spine [1]. For each age period, certain types of primary spinal tumors are characteristic (Table 1). 1) [2, 9, 20]. It should be noted that various types of primary bone tumors affect a specific vertebral segment and vertebral zone. For example, osteoidosteomas and osteoblastomasusually grow from the posterior structures of the cervical or lumbar vertebrae, and rarely from the thoracic vertebrae [20]. Osteoid-osteoma and osteoblastoma are similar in histological structure, consisting of osteoblasts that produce osteoid and membranous reticulofibrous bone tissue. In some cases, differential diagnosis of these neoplasms is a difficult task.

Osteoblastomas are described in less than 1% of patients with benign spinal tumors, and osteoidosteomas are described in approximately 9 % of patients [20]. Primary differential diagnosis is based on the size of the tumor: osteoblastoma reaches a large size (more than 2 cm in diameter), the size of osteoid-osteoma, as a rule, is less than 1 cm. Tumors from 1 to 2 cm in diameter can not always be clearly differentiated by size alone [20].

Below is a clinical case of a 6-year-old patient with a hard-to-differentiate остеобластомой1.5 cm C3 lateral mass osteoblastoma.

Clinical picture. A 6-year-old patient complained of neck pain radiating to the occipital region. Parents of the child noted periodic torticollis attacks, for which the child was treated on-но an outpatient basis from the age of 3. According to the characteristics of neck pain, they were daily, independent of the time of day, and during a painful attack, neck movements and palpation were moderately painful. There were no focal neurological symptoms during or outside the pain attack. The pain was relieved by taking non-steroidal anti-inflammatory drugs, which the boy had been dependent on for the last six months. No concomitant diseases were detected, and the hereditary history of cancer is not burdened.

Thus, a neurologically intact patient (Frenkel grade E) had a score of 70 on the Lansky scale before surgery.

According to laboratory tests, undetected leukocytosis was observed.

Radiation methods of examination. According to the X-ray data of the cervical spine (Fig. 1), a slight thickening in the area of the left intervertebral joint C2-C3 was determined, as well as the obliteration of the joint gap line.

2) revealed a 16 x 15 x 14 mm tumor located in the area of the upper left articular process of the vertebra (zones 2, 3 and 4 according to Tomita; sectors 1, 2, 3 and zones B, C, D according to the Weinstein - Boriani - Biagini classification). According to Tomita classification, this tumor belongs to type B4. On the SINS scale (spinal instability scale) - 5 points (spine is stable). Compared to a CT scan of the cervical spine performed 6 months prior to this examination, the tumor increased by 20 % (13 x 13 x 12 mm). According to CT, the tumor structure was homogeneous with pinpoint areas of signal amplification along the periphery,

with hypodense signal from the center of the tumor; there was no pronounced perifocal sclerosis. MRI of the cervical spine showed an expansively growing limited inhomogeneous (iso - and hypodense formation in T1-weighted images and hypo-and hyperdense in T2-weighted study) neoplasm. There were no signs of bone marrow edema. When contrasting with gadolinium, the tumor did not accumulate contrast.

The main indication for surgery in this patient was persistent pain (lasting more than three years) with periodic transient attacks of torticollis. Secondary indications: dependence on painkillers and signs of local aggressive tumor growth with destruction of the internal end plate of the spinal canal (Fig. 2) and the walls of the left intervertebral foramen C3-C4.

Operation. The patient underwent a one-stage operation: posterior access to the C2-C3 vertebrae, total resection of the tumor with treatment of the adjacent articular surface of the lower articular process of the C2 vertebra. Macroscopically, the tumor had a loose structure and bled moderately. Polyaxial screws were inserted into the pars interarticularis of the C2 vertebra and into the lateral masses of the C4 vertebra on both sidesполиаксиальные, and a simulated implant from the treated allocost was placed in place of the resected tumor. A compression maneuver was performed on both sides to fix the implant.

Histological examination. Microscopic visualization of micro-preparations revealed, along with typical tissue fragments of bone, cartilage, and fibrotic structures, fragments of osteogenic tumor formation represented by a network of intertwining thin, mostly osteoid, trabeculae with uneven weak mineralization, between which there is loose fibrous and fibroretic tissue with an increased content of cellular elements and pronounced vascularizationей (Fig. 3).

Transition areas are defined between the tumor mass and surrounding tissue formations. Figure 4 shows the abutment of the tumor formation to the cartilage mass (white arrow), and in the narrow transition zone between the cartilage and the tumor trabecular network, there are bone tissue trabeculae of a coarse-fibrous phenotype (black arrow).

The areas of unchanged bone adjacent to the tumor in some places have a spongy structure, somewhat rarified, with thinned trabeculae

and expansion of the intertrabecular spaces.

The differential diagnosis between osteoblastoma and osteoidosteoma was based on the fact that the size of the tumor focus was more than 1 cm, there was no zone of extensive perifocal sclerosis characteristic of osteoidosteoma.

No signs of malignant growth in the form of cellular polymorphism and atypia, increased representation of mitoses, including pathological ones, were found, on the basis of which malignant variants of osteo-genic tumors were excluded in differential diagnosis. There are also no signs of an inflammatory lesion.

The result of treatment. Radiographs and CT scans after surgery: the tumor was completely removed, the position of the metal structure was satisfactory (Figs. 5, 6). There were no complications in the immediate and long-term postoperative periods. Neurological status at the preoperative level (Frenkel gradeEFrenkel), оценка по шкале Lansky score increased to 90 points. The pain completely disappeared, torticollis attacks did not recur, on the control tomogram 6 months after the operation, spondylosynthesis was satisfactory, there were no data on tumor recurrence.

Discussion

In some cases, the differential diagnosis of osteoidosteoma and osteoblastoma is quite a complex task and is based on the analysis of the clinical, radiological picture and morphological characteristics (Table 2).

The main clinical symptoms of osteoblastoma of the cervical spine include neck pain and restricted movement, torticollis, scoliosis, and rarely signs of myelopathy.[5, 13, 18, 25]. Macroscopically, osteoblastoma is represented by loose bleeding tissue with areas of hemorrhage, is well delimited from the surrounding bone tissue, grows from the spongy substance of the posterior vertebral elements, the vertebral body is involved expansively from the pedicle of the arch [15, 16, 20, 28]. Cases of malignant degeneration of osteoblastomas are described in 12-25 % of patients[16, 19, 20, 27]. In CT, osteoblastoma has the appearance of frosted glass with a hypodense signal in the center [20].

Osteoidosteoma is often manifested by local pain in the area of the tumor, less often by root pain. As a rule, the pain is intense, intermittent, increases with activation and is associated with movement. One of the most common signs is night pain, which decreases when taking aspirin. Macroscopically, an osteoidosteoma is a dense, sclerotic tumor that may have a granulomatous component in the center [20]. In CT, the osteoidosteoma has a uniformhyperdensesignal along the periphery due to the sclerosis zone around and a non-uniform hyperdense signal inside due to the sclerosis areas, there are no signs of bone destruction. During MRI in T2 mode, osteoidosteomas have a hyperintensive signal, and edema of the bone marrow in the area of the neoplasm is also noted.

The final diagnosis of the patient was based on the following signs: tumor size more than 1 cm, appearance of frosted glass on CT with hypodense center, absence of signs of bone marrow edema, growth from the spongy substance of the lateral mass C3, locally invasive growth towards the intervertebral foramen, spinal canal with destruction of the cortical

plate of the vertebra, characteristic structure during removal (loose, bleeding), the absence of a pronounced sclerosis zone around the tumor microscopically.

The choice of surgery for spinal tumors depends on the following factors: the type and size of the tumor, the location of the tumor relative to the spinal cord, neural roots, and vertebral arteries [4], the individual characteristics of the patient, including age, spinal balance [29], and signs of aggressive growth [21]. The following options for surgical treatment of cervical osteoblastomas in children are described: removal of the vertebral body tumor from the anterior approach without fusion [7, 28], removal of the vertebral tumor from the combined (anterior and posterior) access with спондилодезомwire and auto - bone fusion [26], removal from the one-or two-stage combined access (anterior and posterior) with instrumental surgery. by fixing it [6, 10 13, 23, 29], removal of the tumor from the posterior approach with non-instrumental spinal fusion [14, 17], removal of the tumor from the posterior approach with instrumental fixation [3, 6, 8, 22].

In some cases, tumor recurrences have been described, resulting in repeated operations [6, 7, 26]. Block resection of osteoblasts is preferable to ex-cochleation with subsequent irradiation, since this operation is associated with fewer relapses [6]. Неинструментальный Non-instrumental spondylodesis, as well as spondylodesis with auxiliary sublaminar wire fixation, does not provide reliable fixation and leads to a greater number of pseudoarthrosis and complications [8, 11, 24]. The safety and reliability of instrumental screw fixation of the cervical spine in children has been proven in morphological studies, as well as experimentally, and therefore in the last 5-7 years it has become widely used in practice [11, 12].

In the described clinical observation, the patient underwent block resection of osteoblastoma within a healthy bone. Since the lateral mass of the C3 vertebra is completely resected, a stabilizing step is performed-local posterior instrumental access. In addition, the tumor did not spread to the body of the C3 vertebra and there was no need for additional anterior fixation. Conclusions

1. Differential diagnosis of osteoblastoma and osteoidosteoma in some cases is quite a difficult task. It is based on the analysis of clinical and radiological patterns, as well as morphological characteristics.

2. Indication for surgical treatment of osteoblastoma of the cervical spine is symptomatic course. The growth and local aggressive effect of the tumor on adjacent tissues are additional indications for surgery.

3. Block resection of osteoblastoma within a healthy bone is more preferable than excochleation.

4. Local posterior instrumental fixation with a screw system is the optimal way to stabilize the spine in the case of a tumor заднеof the posterolateral structures of the cervical vertebrae.

The study was not sponsored. The authors declare that there is no conflict of interest.

Literature

1. A., Khamidov O., and Shodmanov F. J. 2023. “Computed Tomography and Magnetic Resonance Imaging Play an Important Role in Determining the Local Degree of Spread of Malignant Tumors in the Organ of Hearing”. Central Asian Journal of Medical and Natural Science 4 (3), 929-39. https://cajmns.centralasianstudies.org/index.php/CAJMNS/article/view/1600.
2. Abdurakhmanovich, K. O., & ugli, G. S. O. (2022). Ultrasonic Diagnosis Methods for Choledocholithiasis. Central Asian Journal Of Medical And Natural Sciences, 3(2), 43-47.
3. Abdurakhmanovich, K. O., & ugli, G. S. O. (2022). Ultrasound Diagnosis of the Norm and Diseases of the Cervix. Central Asian Journal Of Medical And Natural Sciences, 3(2), 58-63.
4. Akbarov S. et al. VALUE OF US AND DOPPLEROMETRY IN CHRONIC PYELONEPHRITIS OF PREGNANT WOMEN //Yangi O'zbekiston talabalari axborotnomasi. – 2023. – Т. 1. – №. 2. – С. 26-29.
5. Akhmedov YA, Ataeva SKh, Ametova AS, Bazarova SA, Isakov HKh THE HISTORY OF THE DEVELOPMENT OF RADIATION DIAGNOSTICS. Web of scientist: International scientific research journal. 2021;2:34-42.
6. Akhmedov YA, Rustamov UKh, Shodieva NE, Alieva UZ, Bobomurodov BM Modern Application of Computer Tomography in Urology. Central Asian journal of medical end natural sciences. 2021;2(4):121-125.
7. Alimdjanovich, R.J., Obid , K., Javlanovich, Y.D. and ugli, G.S.O. 2022. Advantages of Ultrasound Diagnosis of Pulmonary Pathology in COVID-19 Compared to Computed Tomography. Central Asian Journal of Medical and Natural Science. 3, 5 (Oct. 2022), 531-546.
8. Alimdjanovich, Rizayev Jasur, et al. "Start of Telemedicine in Uzbekistan. Technological Availability." Advances in Information Communication Technology and Computing: Proceedings of AICTC 2022. Singapore: Springer Nature Singapore, 2023. 35-41.
9. Amandullaevich A. Y., Abdurakhmanovich K. O. Organization of Modern Examination Methods of Mammary Gland Diseases //Central Asian Journal of Medical and Natural Science. – 2022. – Т. 3. – №. 5. – С. 560-569.
10. Ataeva SKh, Ravshanov ZKh, Ametova AS, Yakubov DZh Radiation visualization of chronic joint diseases. Central Asian journal of medical end natural sciences. 2021;2(2):12-17
11. Babajanovich K. Z., Abdurakhmanovich K. O., Javlanovich Y. D. Ultrasound and MSCT as the Next Step in the Evolution of the Examination of Patients with Ventral Hernias //Central Asian Journal of Medical and Natural Science. – 2022. – Т. 3. – №. 5. – С. 583-591.
12. Baxıtjanovich, Bekjanov Nursulton. "QARAQALPAQSTAN RESPUBLIKASI AWIL XOJALIG’I TOPIRAQLARIN EKOLOGIYALIQ BAHALAW." Galaxy International Interdisciplinary Research Journal 10.10 (2022): 397-399.
13. Gaybullaev S. O., Fayzullayev S. A., Khamrakulov J. D. Cholangiocellular Cancer Topical Issues of Modern Ultrasound Diagnosis //Central Asian Journal of Medical and Natural Science. – 2023. – Т. 4. – №. 3. – С. 921-928.
14. Hamidov OA, Diagnostics of injuries of the soft tissue structures of the knee joint and their complications. European research. Moscow. 2020;1(37):33-36.
15. I., Davranov I., and Uteniyazova G. J. 2023. “Koronavirus Diagnostikasida O’pkani Ktsi: Qachon, Nima Uchun, Qanday Amalga Oshiriladi?”. Central Asian Journal of Medical and Natural Science 4 (3), 947-55. https://cajmns.centralasianstudies.org/index.php/CAJMNS/article/view/1602.
16. Kadirov J. F. et al. NEUROLOGICAL COMPLICATIONS OF AIDS //Journal of new century innovations. – 2022. – Т. 10. – №. 5. – С. 174-180.
17. Khamidov O. A., Shodmanov F. J. Computed Tomography and Magnetic Resonance Imaging Play an Important Role in Determining the Local Degree of Spread of Malignant Tumors in the Organ of Hearing //Central Asian Journal of Medical and Natural Science. – 2023. – Т. 4. – №. 3. – С. 929-939.

18. Khamidov OA, Akhmedov YA, Ataeva SKh, Ametova AS, Karshiev BO Role of Kidney Ultrasound in the Choice of Tactics for Treatment of Acute Renal Failure. Central Asian journal of medical end natural sciences. 2021;2(4):132-134
19. Khamidov OA, Akhmedov YA, Yakubov DZh, Shodieva NE, Tukhtaev TI DIAGNOSTIC POSSIBILITIES OF USES IN POLYKYSTOSIS OFKIDNEYS. Web of scientist: International scientific research journal. 2021;2(8):27-33
20. Khamidov OA, Ataeva SKh, Ametova AS, Yakubov DZh, Khaydarov SS A Case of Ultrasound Diagnosis of Necrotizing Papillitis. Central Asian journal of medical end natural sciences. 2021;2(4):103-107
21. Khamidov OA, Ataeva SKh, Yakubov DZh, Ametova AS, Saytkulova ShR ULTRASOUND EXAMINATION IN THE DIAGNOSIS OF FETAL MACROSOMIA. Web of scientist: International scientific research journal. 2021;2(8):49-54
22. Khamidov OA, Khodzhanov IYu, Mamasoliev BM, Mansurov DSh, Davronov AA, Rakhimov AM The Role of Vascular Pathology in the Development and Progression of Deforming Osteoarthritis of the Joints of the Lower Extremities (Literature Review). Annals of the Romanian Society for Cell Biology, Romania. 2021;1(25):214 – 225
23. Khamidov OA, Mirzakulov MM, Ametova AS, Alieva UZ Multispiral computed tomography for prostate diseases. Central Asian journal of medical end natural sciences. 2021;2(2):9-11
24. Khamidov OA, Normamatov AF, Yakubov DZh, Bazarova SA Respiratory computed tomography. Central Asian journal of medical end natural sciences. 2021;2(2):1-8
25. Khamidov OA, Urozov UB, Shodieva NE, Akhmedov YA Ultrasound diagnosis of urolithiasis. Central Asian journal of medical end natural sciences. 2021;2(2):18-24
26. Khamidov OA, Yakubov DZh, Alieva UZ, Bazarova SA, Mamaruziev ShR Possibilities of Sonography in Differential Diagnostics of Hematuria. Central Asian journal of medical end natural sciences. 2021;2(4):126-131
27. Khamidov OA, Yakubov DZh, Ametova AS, Bazarova SA, Mamatova ShT Application of the Ultrasound Research Method in Otorhinolaryngology and Diseases of the Head and Neck Organs. International Journal of Development and Public Policy. 2021;1(3):33-37
28. Khamidov OA, Yakubov DZh, Ametova AS, Turdumatov ZhA, Mamatov RM Magnetic Resonance Tomography in Diagnostics and Differential Diagnostics of Focal Liver Lesions. Central Asian journal of medical end natural sciences. 2021;2(4):115-120
29. Khamidov Obid Abdurakhmanovich, Davranov Ismoil Ibragimovich, Ametova Alie Servetovna. (2023). The Role of Ultrasound and Magnetic Resonance Imaging in the Assessment of Musculo-Tendon Pathologies of the Shoulder Joint. International Journal of Studies in Natural and Medical Sciences, 2(4), 36–48. Retrieved from https://scholarsdigest.org/index.php/ijsnms/article/view/95
30. Khasanova Diyora Zafarjon kizi, Khamidov Obid Abdurakhmonovich and Juraev Kamoliddin Danabaevich 2023. SYMPHYSIOPATHY AND PREGNANCY. "Conference on Universal Science Research 2023". 1, 2 (Feb. 2023), 55–60.
31. Khudayberdiyevich Z. S. et al. Possibilities and Prospects of Ultrasound Diagnostics in Rheumatology //Central Asian Journal of Medical and Natural Science. – 2022. – Т. 3. – №. 5. – С. 570-582.
32. Mambetullaeva, S. M., G. N. Utemuratova, and S. Sh Yeshchanova. "ECOLOGICAL TRANSFORMATIONS IN THE SOUTHERN ARAL SEA REGION AS A FACTOR OF POPULATION DYNAMICS (ON THE EXAMPLE OF RHOMBOMYS OPIMUS AND ONDATRA ZIBETHICA)." Annals of the Romanian Society for Cell Biology (2021): 13428-13436.
33. N., Nurmurzayev Z., Abduqodirov Kh. M., and Akobirov M. T. 2023. “Transabdominal Ultrasound for Inflammatory and Tumoral Diseases Intestine: New Possibilities in Oral Contrasting With Polyethylene Glycol”. Central Asian Journal of Medical and Natural Science 4 (3), 973-85. https://cajmns.centralasianstudies.org/index.php/CAJMNS/article/view/1606.

34. Nurmurzayev Z.N.; Suvonov Z.K.; Khimmatov I.Kh. Ultrasound of the Abdominal Cavity. JTCOS 2022, 4, 89-97.
35. O., Gaybullaev S., Fayzullayev S. A., and Khamrakulov J. D. 2023. “Cholangiocellular Cancer Topical Issues of Modern Ultrasound Diagnosis”. Central Asian Journal of Medical and Natural Science 4 (3), 921-28. https://cajmns.centralasianstudies.org/index.php/CAJMNS/article/view/1599.
36. Obid, K., Servetovna, A. A., & Javlanovich, Y. D. (2022). Diagnosis and Structural Modification Treatment of Osteoarthritis of the Knee. Central Asian Journal of Medical and Natural Science, 3(5), 547-559.
37. P., Kim T., and Baymuratova A. C. 2023. “Fast Technology for Ultrasonic Diagnosis of Acute Coleculosis Cholecystitis”. Central Asian Journal of Medical and Natural Science 4 (3), 940-46. https://cajmns.centralasianstudies.org/index.php/CAJMNS/article/view/1601.
38. Rustamov UKh, Shodieva NE, Ametova AS, Alieva UZ, Rabbimova MU US-DIAGNOSTICS FOR INFERTILITY. Web of scientist: International scientific research journal. 2021;2(8):55-61
39. Rustamov UKh, Urinboev ShB, Ametova AS Ultrasound diagnostics of ectopic pregnancy. Central Asian journal of medical end natural sciences. 2021;2(2):25-28
40. S., Usarov M., Turanov A. R., and Soqiev S. A. 2023. “Modern Clinical Capabilities of Minimally Invasive Manipulations under Ultrasound Control”. Central Asian Journal of Medical and Natural Science 4 (3), 956-66. https://cajmns.centralasianstudies.org/index.php/CAJMNS/article/view/1604.
41. Usarov M.Sh, Otakulov Z.Sh and Rakhmonkulov Sh. H. 2022. Contrast-enhanced ultrasound in the differential diagnosis of focalnodular hyperplasia and hepatocellular liver adenoma. Journal the Coryphaeus of Science. 4, 4 (Dec. 2022), 70–79.
42. Yakubov , J., Karimov , B., Gaybullaev , O., and Mirzakulov , M. 2022. Ultrasonic and radiological picture in the combination of chronic venous insufficiency and osteoarthritis of the knee joints. Academic Research in Educational Sciences. 5(3), pp.945–956.
43. Yakubov D. Z., Gaybullaev S. O. The diagnostic importance of radiation diagnostic methods in determining the degree of expression of gonarthrosis //UZBEK JOURNAL OF CASE REPORTS. – С. 36.
44. Yakubov D.J., Turanov A.R. and Baymuratova A.C. 2022. Possibilities of contrast-enhanced ultrasound tomography in the diagnosis of metastatic liver lesions in patients with cervical cancer. Journal the Coryphaeus of Science. 4, 4 (Dec. 2022), 80–88.
45. Yakubov Doniyor Javlanovich, Juraev Kamoliddin Danabaevich, Gaybullaev Sherzod Obid ugli, and Samiev Azamat Ulmas ugli. 2022. “INFLUENCE OF GONARTHROSIS ON THE COURSE AND EFFECTIVENESS OF TREATMENT OF VARICOSE VEINS”. Yosh Tadqiqotchi Jurnali 1 (4):347-57.
46. Yeshchanova S. SH. and Panaeva A. N. 2022. CULTIVATION OF PUMPKIN CUCURBITA PEPO VARIETIES IN THE SOIL-CLIMATIC CONDITIONS OF KARAKALPAKSTAN. Galaxy International Interdisciplinary Research Journal. 10, 10 (Oct. 2022), 451–453.
47. Yeshchanova, S. "SH., Mambetullaeva SM Dynamics of Demographic Indicators during the Population Cycle Microtus Ilaeus in the Low of the Amudarya." *International Journal of Science and Research (IJSR)* 8.12 (2019): 911-912.
48. Yusufzoda Hosiyat Turon kizi, Khamidov Obid Abdurakhmonovich and Juraev Kamoliddin Danabaevich 2023. DIAGNOSIS OF CHANGES IN PREGNANT WOMEN WITH VULVOVAGINITIS. "Conference on Universal Science Research 2023". 1, 2 (Feb. 2023), 51–55.
49. Z., Umarkulov Z., Khakimov M. B., and Suvonov Z. K. 2023. “Ultrasound Diagnostics and Diapeutics of Focal Liquid Lesions of the Liver”. Central Asian Journal of Medical and Natural Science 4 (3), 986-94. https://cajmns.centralasianstudies.org/index.php/CAJMNS/article/view/1607.

50. Ахмедов Якуб Амандуллаевич; Гайбуллаев Шерзод Обид угли; Хамидова Зиёда Абдивахобовна. МРТ В СРАВНЕНИИ С ДИАГНОСТИЧЕСКОЙ АРТРОСКОПИЕЙ КОЛЕННОГО СУСТАВА ДЛЯ ОЦЕНКИ РАЗРЫВОВ МЕНИСКА. Tadqiqotlar 2023, 7, 105-115.
51. Гайбуллаев Ш., Усаров М., Далерова М. НОРМАЛЬНЫЕ УЛЬТРАЗВУКОВЫЕ РАЗМЕРЫ ЖЕЛЧНОГО ПУЗЫРЯ И ОБЩЕГО ЖЕЛЧНОГО ПРОТОКА У НОВОРОЖДЕННЫХ //Involta Scientific Journal. – 2023. – Т. 2. – №. 1. – С. 142-148.
52. Ешчанова, Сайёра Шукурулла Кизи. "ОЦЕНКА ВЛИЯНИЯ ВНЕШНИХ И ВНУТРИПОПУЛЯЦИОННЫХ ФАКТОРОВ В ФОРМИРОВАНИЕ ДИНАМИКИ ЧИСЛЕННОСТИ И СТРУКТУРЫ ПОПУЛЯЦИИ MICROTUS ILAEUS." Universum: химия и биология 5-1 (95) (2022): 37-41.
53. Жавланович, Я. Д., Амандуллаевич, А. Я., Зафаржонович, У. З., & Павловна, К. Т. (2023). Мультипараметрическая МРТ В Диагностике Рака Предстательной Железы. Central Asian Journal of Medical and Natural Science, 4(2), 577-587. https://doi.org/10.17605/OSF.IO/MQDHP
54. Кадиров Ж. Ф. и др. МАГНИТНО-РЕЗОНАНСНАЯ ТОМОГРАФИЧЕСКАЯ ОЦЕНКА ПОРАЖЕНИЙ ЦЕНТРАЛЬНОЙ НЕРВНОЙ СИСТЕМЫ У БОЛЬНЫХ, ИНФИЦИРОВАННЫХ ВИРУСОМ ИММУНОДЕФИЦИТА ЧЕЛОВЕКА //Journal of new century innovations. – 2022. – Т. 10. – №. 5. – С. 157-173.
55. Нурмурзаев, З. Н., Жураев, К. Д., & Гайбуллаев, Ш. О. (2023). ТОНКОИГОЛЬНАЯ АСПИРАЦИОННАЯ ЦИТОЛОГИЯ ПОД УЛЬТРАЗВУКОВЫМ КОНТРОЛЕМ В ДИАГНОСТИКЕ ЗАБРЮШИННЫХ ОБРАЗОВАНИЙ: ИССЛЕДОВАНИЕ 85 СЛУЧАЕВ. Academic Research in Educational Sciences, 4(4), 126–133.
56. угли, А.С.Н., Хамидович, Р.Ш. and Данабаевич, Ж.К. 2023. Кость При Остеоартрите: Визуализация. Central Asian Journal of Medical and Natural Science. 4, 3 (Jun. 2023), 895-905.
57. угли, Н. З. Н., Шухратович, У. М., Хуршедовна, А. С. and Фаёзович, В. Ф. (2023) “Роль Ультразвука В Оценке Повреждения Мениска”, Central Asian Journal of Medical and Natural Science, 4(2), pp. 588-595. doi: 10.17605/OSF.IO/M5HZP.
58. угли, Химматов Ислом Хайрулло, Сувонов Зуфар Кахрамон угли, and Умаркулов Забур Зафаржонович. 2023. “Визуализация Множественной Миеломы”. Central Asian Journal of Medical and Natural Science 4 (3), 906-16. https://cajmns.centralasianstudies.org/index.php/CAJMNS/article/view/1597.
59. Хамидов , О. , Гайбуллаев , Ш. и Давранов , И. 2023. СРАВНЕНИЕ РЕЗУЛЬТАТОВ УЗИ И МРТ В ДИАГНОСТИКЕ ПОВРЕЖДЕНИЙ МЕНИСКА КОЛЕННОГО СУСТАВА. Евразийский журнал медицинских и естественных наук. 3, 4 (апр. 2023), 176–183.
60. Хамидов О. А., Гайбуллаев Ш. О., Хакимов М. Б. ОБЗОР МЕТОДОВ ОБРАБОТКИ ИЗОБРАЖЕНИЙ ДЛЯ ДИАГНОСТИКИ ПАТОЛОГИИ ГОЛОВНОГО МОЗГА: ПРОБЛЕМЫ И ВОЗМОЖНОСТИ //Journal of new century innovations. – 2022. – Т. 10. – №. 5. – С. 181-195.
61. Хамидов О. А., Гайбуллаев Ш. О., Хомидова Д. Д. РОЛЬ УЛЬТРАЗВУКА И МАГНИТНО-РЕЗОНАНСНОЙ ТОМОГРАФИИ В ОЦЕНКЕ МЫШЕЧНО-СУХОЖИЛЬНЫХ ПАТОЛОГИЙ ПЛЕЧЕВОГО СУСТАВА //Uzbek Scholar Journal. – 2023. – Т. 12. – С. 125-136.
62. Хамидов О.А. Оптимизация лучевой диагностики повреждений мягкотканных структур коленного сустава и их осложнений, Американский журнал медицины и медицинских наук. 2020;10 (11):881-884. (In Russ.)
63. Хамидов, О. А., Жураев, К. Д., & Муминова, Ш. М. (2023). СОНОГРАФИЧЕСКАЯ ДИАГНОСТИКА ПНЕВМОТОРАКСА. *World scientific research journal*, *12*(1), 51-59.

64. Ходжибеков М.Х., Хамидов О.А. Обоснование ультразвуковой диагностики повреждений внутрисуставных структур коленного сустава и их осложнений. 2020;3(31):526-529. (In Russ.)
65. Юсуфзода Х. и др. ОПТИМАЛЬНЫЕ МЕТОДЫ ДИАГНОСТИКИ СИНДРОМА МИРИЗЗИ //Yangi O'zbekiston talabalari axborotnomasi. – 2023. – Т. 1. – №. 2. – С. 21-25.
66. Якубов Д. Д., Давранов И. И., Шодикулова П. Ш. ХАРАКТЕРИСТИКИ МСКТ И ДИАГНОСТИЧЕСКАЯ ЦЕННОСТЬ COVID-19 ПРИ БЕРЕМЕННОСТИ //Journal of new century innovations. – 2023. – Т. 22. – №. 1. – С. 165-176.
67. Якубов Д. Ж., Гайбуллаев Ш. О. Влияние посттравматической хондропатии на функциональное состояние коленных суставов у спортсменов. Uzbek journal of case reports. 2022; 2 (1): 36-40. – 2022.