For this reason the standard VEB camera lens was changed for high-quality microplanar lenses with focal length 40 and 60 mm. The corresponding screw adapters were used for connection of mentioned objects with VEB camera.

The correct choice of lighting is an important condition for objective and quality image obtaining. The devise was equipped with illuminator containing fluorescent lamp (9) on a special stand (10) used as the source of light, which provided the luminous flux direction in wide range. Fluorescent lighting made it possible to maintain the normal color reproduction of VEB camera.

It should be considered that the depth of field in macro photography is limited and decreases with the increase in magnification degree. Therefore, the correct choice of magnification for particular object is the compromise between the choices of required depth of field and image scale.

VEB camera was connected to computer using USB connector. The most VEB cameras are equipped with software which provides the access for adjustment of brightness and contrast of the image in a wide range as well as color gamut regulation.

The necessary relief on the surface of the implants is formed in the process of sandblasting and surface hardening is carried out in this case. It is logical to assume that the relief depth is determined by the size of the abrasive particles, and the degree of hardening – by the particles shape.

The investigation was conducted with electrocorndum F60, F80, F120, which differed in the average size of abrasive particles.

The micro- and macrostructures of the implant surfaces were examined with microscope and PMT-3 microhardnesser to determine the depth of microrelief (lacuna). Considering the dial gauge indications with 1 micrometer dividing point fixed on microscope, the depth of the implant microrelief can be detected.

Key words: dental implants, micro and macroreliefs, macro photography, lacunas.

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MULTISLICE COMPUTED TOMOGRAPHY WITH 3D-RECONSTRUCTION IN DIAGNOSTIC OF MASTOIDITIS

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Introduction. According to the WHO, annually in the world 51000 people die before the age of 25 from illnesses, associated with either acute otitis media or chronic suppurative otitis media. Despite the fact that the clinic and the course of complicated otitis media in our era of empirical antibiotic therapy undergoes significant changes, the pertinence of the problem of diagnosis and treatment of various forms of mastoiditis leaves no doubt. The importance and social significance of this type of pathology lies in the fact that it has unfavorable not only functional, but sometimes also life forecast, as it can often cause the development of severe local and intracranial complications [1].

Recently, many authors noted the change in the clinical course of perforated middle otitis, namely: an increase in the number of prolonged course of acute otitis media, the emergence of cases where purulent inflammation in the middle ear initially takes clinical features of the chronic course. There is a decrease in the resistance of the pathogen to the antibacterial agents used, which leads to incomplete rehabilitation of the center of purulent inflammation. In case of violation of the evacuation of purulent contents from the tympanic cavity (nonperforative flow of acute otitis media, anthya-antral block), surgical treatment – miringotomy or anthropogenic treatment – is performed. When involved in the inflammation of the cavity and cells of the mastoid, in the development of bone destruction of the temporal bone resorted to various surgical interventions on the mastoid, up to its complete removal [1-4].

The urgency of studying the problem of mastoiditis is due not only to the high level of its prevalence. The frequency of acute otitis media in the structure of otolaryngologic diseases is 15-20%, and among the diseases of the ear reaches 65-70%. In parallel with an increase in the incidence of purulent mastoiditis, the frequency and various chronic forms increases.

The beginning of mastoiditis is characterized by inflammatory changes in the mucous layer of the cells of the mastoid with the development of periostitis and the accumulation of fluid in the cell cavities, which is best visualized on a multislice computed tomography with 3D-reconstruction. Due to the expressed exudation, this stage of mastoiditis was called exudative. The inflammatory swelling of the mucous membrane leads to the closure of the openings, which communicate the cells between themselves, as well as the holes connecting the mastoid with the tympanic cavity. As a result of a violation of ventilation in the cells of the mastoid, air pressure drops in them. Through the pressure gradient, transudates from the enlarged blood vessels begin to enter the cell. The cells are filled with serous, and then serous-purulent exudate. The duration of the first stage of mastoiditis in adults is 7-10 days, in children more often 4-6 days. Eventually, the exudative stage of mastoiditis, each cell has the form of empyema – filled with pus of the cavity.

Next, mastoiditis passes into the second stage – proliferative-alternative, in which purulent inflammation extends to the bone walls and septum of the mastoid with the development of osteomyelitis – purulent melting of the bone. At the same time, granulation tissue is formed. Gradually the partitions between the cells collapse and one large cavity is formed, filled with manure

and granulation. So, as a result of mastoiditis there is an empyema of the mastoid.

The breakthrough of pus due to the damaged walls of the mastoid leads to the spread of purulent inflammation on adjacent structures and the development of complications of mastoiditis.

The main methods of diagnosis of mastoiditis are the aiming radiography of the skull, MSCT of the temporal bones.

The method of multislice computed tomography was previously less common and inaccessible. In 1976, 4 years after the invention of the method of computed tomography, the first publications in the world medical literature devoted to computed tomography of the temporal bone appeared. In 1987, Rgash presented the technique of polypositive computed tomography of high resolution temporal bone in adult patients and compared the results with real anatomical cuts in the particle material. There was a real opportunity to evaluate such subtle details of the structure as the chain of auditory stones, labyrinth windows, the facial nerve channel, the structure of the inner ear, and others [1-4]. According to many authors [1,2,5-7], computed tomography of temporal bones, possessing high informative, allows to reveal hidden hearths of destruction in the middle ear and may appear as the main criterion for differential diagnostics of destructive mean otitis that can justify tactics further treatment. However, we have proved that the method of multislice computed tomography of temporal bones with 3D-reconstruction is the most informative for both primary and differential diagnosis, due to high density (0.5%) and spatial (up to 0.5-1.0 mm) resolution. As a result, it is possible to obtain the image of bone formations and the soft tissue component in their natural mutual dilution. Radial load, according to most authors, often does not exceed the maximum permissible values.

The basic projection in the computed tomography of the ear is the axial projection, since the horizontal position of the patient's body on the table is more comfortable and axial sections easier to obtain, but with the help of multislice computed tomography of temporal bones with 3D-reconstruction in 3 planes (and not two as in computed tomography) the structures of the outer middle and inner ear, the roof of the antrum are identified. Three planes are used: coronal or frontal projection, axial, sagittal or lateral projection, in which the promenctorial wall becomes perpendicular to the cut plane, allows to see the window of the pre-eyelid, the tympanal segment of the facial nerve channel [8-11].

Proved advantage multislice computed tomography of the temporal bone with 3D-reconstruction in the diagnosis of various forms of mastoiditis, allowing to identify low-grade inflammation of the mastoid, not revealed by conventional radiological study methods and not visualized by conventional CT. The complicated structure of the temporal bone with the convoluted body in it and the balance affects the quality of the diagnostic process. The main disadvantage of classic radiological methods are: low resolution imposing extraneous shadows, projection distortion, difficulty laying, inability to obtain soft tissue images, picture quality dependent on the skills laboratory X-ray and others. Because of the above reasons, the interpretation of the resulting images is often informal and difficult [11]. In connection with the advent of modern multislice computed tomographs, it was possible to conduct such a technique as multislice computed tomography of temporal bones with 3D-reconstruction. Multislice computed tomography of the temporal bone shows the exact structure of these entities and bodies inside and around them in the first place, mastoid, middle and inner ear. In addition to the structures already listed, multislice computed tomography visualizes the condition of the external auditory passage, the wall of the eyelet, and others. Thus, with the help of MSCT, it is possible to simultaneously evaluate the diseases of organs located in this anatomical region and the pathological processes occurring in the adjacent areas.

Despite the fact that the temporal bone has a relatively small size, its surface distinguish more than fifty different small entities (performances nerve channels, etc.), so the study should elect only those imaging options that differ most sensitive and held with the use of better equipment. In the first place, this is a multislice computer tomography on the devices of the last generation, by means of which diagnostics can be performed not only with the capture of images, but also with the reproduction of a three-dimensional model of the temporal bone. This will help to detect inflammatory, oncological processes, anomalies of development, vascular disorders and other pathologies, even in the presence of minimal external changes [12-14].

The study was aimed to assess the diagnostic values of the multislice computed tomography with 3d-reconstruction in diagnostic of mastoiditis.

Object and methods. The presented study was not linked to any registered research topic.

With the help of MSCT method, we examined patients at the following bases:

1. Department of Radiation Diagnostics, Radiation Therapy and Radiation Medicine ONMedU.

2. Center for reproductive and rehabilitation medicine (University Clinic) Odessa National Medical University.

Most surveys were conducted for operative and conservative treatment. We performed 50 studies. Men accounted for 52% (26 patients), women 48% (24 patients). The patient's age ranged from 18 to 90 years.

The examination of the temporal bones was performed on a 16-slice computed tomography machine TOSHIBA Aquillion, Japan. Scanning parameters: scanning in 3 planes, thickness from 1 mm to 5 mm. The patient's head is fixed to exclude dynamic artifacts. When analyzing MSCT images using bone and soft tissue modes of 3D-reconstruction, measure bone density and density of the mastoid process their content using the program Efilm. The criteria for evaluation is sufficient pneumatization of mastoid cells, cell density on the mastoid, lack of content and pathological inflammatory changes in mucosal cells of mastoid processes **(Fig. 1).**

Research results. All 50 patients examined with multislice computed tomography were divided into 6 groups.

Patients were divided into 2 groups according to the duration of the inflammatory process.

The first group included 23 patients (46%) with acute mastoiditis.

The second group included 15 patients (30%) with chronic mastoiditis.

The third group included 3 patients (6%) with post-traumatic mastoiditis.

Were formed 2 groups with complications of mastoiditis.

The fourth group included 4 patients (8%) with external cranial complications: labyrinth, hearing impairment, paralysis of the facial nerve.

The fifth group included 1 patient (2%) with intracranial complications: the spread of an infection in the brain that causes meningitis, encephalitis, abscess of different parts of the brain, phlegmons in the neck region.

Sixth group – control. The sixth group included 4 patients (8%). The control group was formed from patients who were sent for examination and found to be healthy. The evaluation criteria were sufficient pneumatization of the cells of the mastoid, the corresponding cell density of the mastoid, the absence of content and inflammation of the mucous membrane in the cells of the mastoid. To determine the anatomical structure and peculiarities of the structure of the mastoid, we conducted a study of 4 patients without pathology from the temporal bone. The size of the antral cell and the thickness of its bone walls were different and determined by the type of structure of the mastoid. Different types of structure of the mastoid clearly differentiated on tomographs. The main benchmark for all studies of the temporal bone, according to our data and according to other researchers [7,11], was the antrum. Antrum is the largest, and most importantly, permanent cell of the mastoid associated with the attic through the entrance to it of similar processes. The pneumatic type of the structure of the mastoid in the image was characterized by a well-developed cellular system characterized by air cells of the correct configuration. Cells were located in a certain order, their magnitude increased in the direction towards the periphery of the appendix. Intercellular septum and cortical layer of the mastoid were thin and did not exceed 1-2 mm. A part of the cells went beyond the mastoid and was visualized in various areas – scales, foreskin, on the apex and on the base of the pyramid, around the labyrinth. The mixed type of structure was characterized by a mediocre developed porous system of the mastoid and the location of airborne cells predominantly in the perianth region. Separate groups of cells found near the sigmoid sinus. Plots of the mastoid, deprived of cells, had a spongiform structure. There was no clear pattern in the location, the shape and size of the cells. Intercellular septum and cortical layer of the mastoid were extremely variegated in thickness (1-6 mm). We did not detect a complete or almost complete absence of the cellular system, which in MSCT characterizes the mastoid formed by sclerotic, sharply densified bone in the study group of unchanged temporal bones (otologically healthy patients). Thus, from this fact it can be concluded that the sclerotic type of the structure of the cell structure of the temporal bones, due to the previously inflamed process. In otologically healthy people, as a rule, there is a pneumatic type of structure and less common or spongy type of structure of the airborne cells of the mastoid.

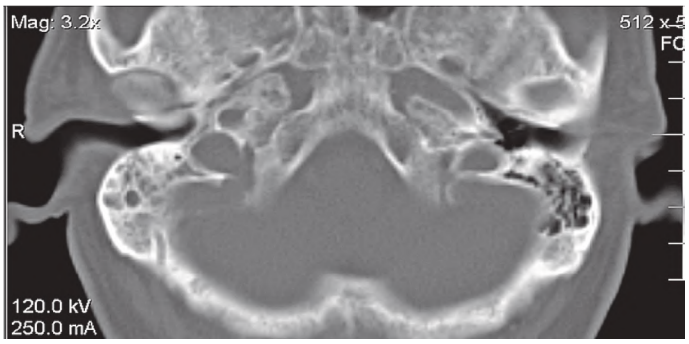

Fig. 1. MSCT of temporal bones. Axial reconstruction. Cells of the mastoid are filled with content of nonhomogeneous density + 7 + 20 HU. Left mastoid - no changes.

Fig. 2. MSCT of temporal bones. Axial reconstruction. Cells of the right mastoid are filled with content of non-uniform density + 19 + 40 HU. Left mastoid - no changes.

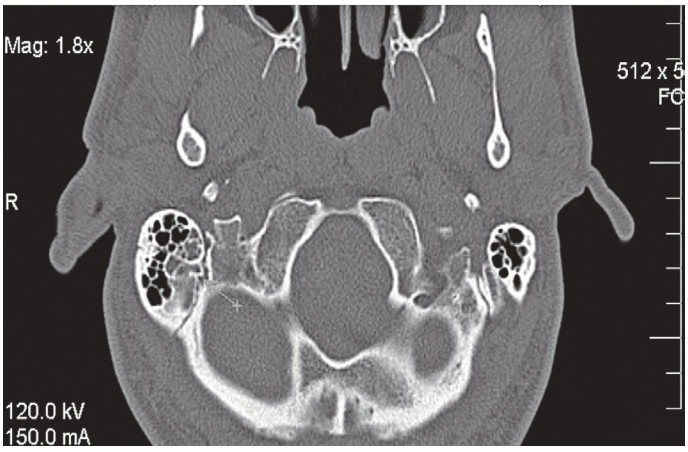

Fig. 3. MSCT of temporal bones. Axial reconstruction. Cells of the right mastoid are filled with content of nonhomogeneous density + 15 + 35 HU. Observed purulent melting of the membranes. Left mastoid - no changes.

In the analysis of images obtained by means of multislice computed tomography with 3D-reconstruction, in the cavity of the cystic fibroids in the verification of mastoiditis, the level of content of inhomogeneous density was detected, in some cases purulent melting of the cells of the mastoid was recorded.

Due to the method of multislice computed tomography, the quality of differential diagnostics of the peculiarities of the structure of the matoid with inflammatory and dystrophic phenomena in the matoid was improved, and differential diagnostic criteria for inflammatory diseases of the middle ear and mastoid were developed. The possibility of multislice computed tomography allows us to estimate the state of bone tis-

Table.

Distribution of patients accordingly to verified conditions

Group No	Group	Number of patients	Percent %
1.	Acute mastoiditis	23	46
2.	Chronic mastoiditis	15	30
3.	Posttraumatic mastoiditis	3	6
4.	External cranial complications	4	8
5.	Intracranial complications	1	2
6.	Control	4	8

Fig. 4. MSCT of temporal bones. Axial reconstruction. Cells of mastoid on both sides are filled with content inhomogeneous density + 17 + 30 HU.

sue of the temporal bones, including the detection of purulent melting of the bone, to determine the density of pathological content and pneumatization of cells of the mastoid, which is the most informative in patients with acute and post-traumatic mastoiditis. As a result, given the data obtained, managed to choose tactics of conservative or surgical treatment **(Table).**

Clinical Case 1. Patient G., 65 years old, turned to a consultation with the otorhinolaryngologist with complaints of headache and stroke in the temporal area of the case for 1 month. After MSCT the following image was received **(Fig. 2).**

Clinical Case 2. Patient U., 23 years old, turned to a neurologist for a consultation with a complaint for the pain of the ear in the temporal area of the case for 1 week. There were obtained following data of MSCT **(Fig. 3).**

Clinical Case 3. Patient M., 40 years, turned to a consultation with the otorhinolaryngologist with complaints of headache and hearing loss for 2 months. The bilateral lesions **(Fig. 4)** were obtained on MSCT.

Conclusion. Multislice computed tomography with 3D-reconstruction is an informative method of diagnosis in the detection of mastoiditis, the possibility of multislice computed tomography allows to distinguish tissues of the mastoid, to detect pathological content in the cells of the mastoid and to measure its density, detects purulent melting of the bone.

The accompanying software allows the treating physician to independently analyze a qualitative three-dimensional image of the area of interest.

Due to the method of multislice computed tomography, the quality of differential diagnostics of the peculiarities of the structure of the mastoid with inflammatory and dystrophic phenomena in the mastoid was improved, and differential diagnostic criteria for inflammatory diseases of the middle ear and mastoid were developed. The possibility of multislice computed tomography allows us to estimate the state of bone tissue of the temporal bones, including the detection of purulent melting of the bone, to determine the density of pathological content and pneumatization of cells of the mastoid, which is the most informative in patients with acute and post-traumatic mastoiditis. As a result, given the data obtained, managed to choose tactics of conservative or surgical treatment.

The perspectives of further researches could be linked to the development of unified guideline for the visualization of the inflammatory processes in the mastoid processus.

References

1. Amirov AM. Acute lingering mastoidites. Features of diagnostics, clinic and treatment tactics. The dissertation author's abstract on competition of a scientific degree of the candidate of medical sciences. Moscow, 2008. p. 42-85.
2. Bezega MI, Plastka AI, Rimar VV. Acute mastoiditis. Algorithm of conservative and surgical treatment. Journal of Ear, Nasal and Throat Diseases. 2011;1:45-8.
3. Burkutbayeva TN, Abdyikalikova ZhZh, Auelbayev MD, Zhumahmetov MS, Grigorenko VI, Omirkhanova AS, et al. Features of clinical course, diagnostics, treatment of lingering mastoidites. Ministry of Medicine. 2013;9:74-6.
4. Castillo-López IY, Muñoz-Lozano AG, Bonner-Osorio CB. Post-traumatic cholesteatoma with posterior fossa invasion. Acta Otorrinolarynol Esp. 2011;62(4):318-9.
5. Gamov VP. Rational pharmacotherapy for diseases of the ear, throat and nose. Ed. AS Lopatin M.: Litterra; 2011. p. 521-9.
6. Green MC, Mason EO, Kaplan SL, Lamberth LB, Stovall SH, Givner LB, et al. Increase in the prevalence of Streptococcus pneumoniae serotype 6C at Eight Children's Hospitals in the United States from 1993 to 2009. J Clin Microbiol. 2011;49(6):2097-101.
7. Minks DP. Acute mastoiditis – the role of radiology. Clinical Radiology. 2013;68(4):397-405.
8. Polat S, Aksoy E, Serin GM, Yıldız E, Tanyeri H. Incidental diagnosis of mastoiditis is MRI. Eur Arch Otorhinolaryngol. 2011;268 (8):1135-8.
9. Razvozzhaev YuB. Rhenga Computed Tomography in the Diagnosis of Middle Otitises: Diss. Cand. honey. Sciences. M., 2011.
10. Semenov FV, Volik AK. Tactics of surgical treatment of patients with chronic purulent otitis media with various forms of pathological process in the middle ear. Problems and possibilities of ear microsurgery. Orenburg, 2012. p. 110-3.
11. Svatko LG, Tsyplakov DE, Rafailov VV. Morphological features of mucous membrane of middle ear and pharyngeal tonsil with exudative mean otitis. In the book Materials of the VII Congress of Otorhinolaryngologists of the Russian Federation. 2011. p. 141-3.
12. Tarantino A. Acute mastoiditis: a 10 year retrospective study. International Journal of Pediatric Otorhinolaryngology. 2002;66:143-8.
13. Zavadsky AV. Influence of pneumatization of the temporal bone on the appearance and course of acute mastoiditis. Journal of Otorhinolaryngology. 2002;5:4-6.
14. Zelikovich EI. X-ray computer tomography of temporal bone in the diagnosis of chronic diseases of the middle ear. The dissertation author's abstract on competition of a scientific degree of the doctor of medical sciences. Moscow, 2005. p. 22-39.

БАГАТОЗРІЗОВА КОМП'ЮТЕРНА ТОМОГРАФІЯ З 3D-РЕКОНСТРУКЦІЄЮ В ДІАГНОСТИЦІ МАСТОЇДИТІВ
Шармазанова О., Демидова О., Суйссі Хамза

Резюме. Метою дослідження було оцінити діагностичні значення багатошарової комп'ютерної томографії з 3D-реконструкцією в діагностиці мастоїдита.

Ми провели 50 досліджень. Чоловіки складали 52% (26 пацієнтів), жінки – 48% (24 пацієнти). Вік пацієнтів становив від 18 до 90 років.

Дослідження скроневих кісток проводили на комп'ютерній томографії з 16 зрізами TOSHIBA Aquillion, Японія. Параметри сканування: сканування в 3 площинах, товщина від 1 мм до 5 мм. Голова пацієнта закріплена, щоб виключити динамічні артефакти. При аналізі зображень МСКТ з використанням методів 3D-реконструкції з використанням кісткових і м'яких тканин вимірювали щільність кісткової тканини соскоподібного відростка, використовуючи програму Efilm. Критерії оцінки – достатня пневматизація соскоподібних клітин, щільність клітин соскоподібного відростка, відсутність змісту і патологічні запальні зміни в клітинах слизової оболонки.

Діагностичні дослідження, виконані 16-зрізним комп'ютерним томографом TOSHIBA Aquillion, Японія, що дозволило отримати якісне зображення м'яких тканин соскоподібного відростка, визначити локалізацію і щільність патологічних утворень. Можливість багатошарової комп'ютерної томографії з 3D-реконструкцією дозволяє оцінити стан кісткової тканини скроневих кісток, в тому числі виявлення гнійного плавлення кістки, визначити щільність патологічного вмісту і пневматизація клітин соскоподібного відростка, який є найбільш інформативним у пацієнтів з гострим і посттравматичним мастоїдитом.

Завдяки методу багатошарової комп'ютерної томографії покращилася якість диференціальної діагностики особливостей структури соскоподібного відростка з запальними і дистрофічними явищами соскоподібного відростка, а також диференціально діагностичні критерії запальних захворювань середнього вуха і зорового носового проростка.

Висока роздільна здатність і високоякісна тривимірна реконструкція дозволили оптимально і короткостроково вибрати успішну консервативну схему терапії, визначити і спланувати обсяг і режим хірургічного втручання. Обстеження, які проводилися в динаміці, допомогли визначити ефективність консервативної терапії і хірургічного втручання, запобігли виникненню ускладнень.

Ключові слова: мастоїдит, комп'ютерна томографія, діагностика.

МНОГОСРЕЗОВАЯ КОМПЬЮТЕРНАЯ ТОМОГРАФИЯ С 3D-РЕКОНСТРУКЦИЕЙ В ДИАГНОСТИКЕ МАСТОИДИТОВ

Шармазанова Е., Демидова Е., Суйсси Хамза

Резюме. Целью исследования было оценить диагностические значения многослойной компьютерной томографии с 3D-реконструкцией в диагностике мастоидита.

Мы провели 50 исследований. Мужчины составляли 52% (26 пациентов), женщины – 48% (24 пациента). Возраст пациентов составлял от 18 до 90 лет.

Исследование височных костей проводили на компьютерной томографии с 16 срезами TOSHIBA Aquillion, Япония. Параметры сканирования: сканирование в 3 плоскостях, толщина от 1 мм до 5 мм. Голова пациента закреплена, чтобы исключить динамические артефакты. При анализе изображений МСКТ с использованием методов 3D-реконструкции с использованием костных и мягких тканей измеряли плотность костной ткани сосцевидного отростка, используя программу Efilm. Критерии оценки – достаточная пневматизация сосцевидных клеток, плотность клеток сосцевидного отростка, отсутствие содержания и патологические воспалительные изменения в клетках слизистой оболочки.

Диагностические исследования, выполненные 16-срезным компьютерным томографом TOSHIBA Aquillion, Япония, позволили получить качественное изображение мягких тканей сосцевидного отростка, определить локализацию и плотность патологических образований. Возможность многослойной компьютерной томографии с 3D-реконструкцией позволяет оценить состояние костной ткани височных костей, в том числе выявление гнойного плавления кости, определить плотность патологического содержимого и пневматизацию клеток сосцевидного отростка, который является наиболее информативным у пациентов с острым и посттравматическим мастоидитом.

Благодаря методу многослойной компьютерной томографии улучшилось качество дифференциальной диагностики особенностей структуры сосцевидного отростка с воспалительными и дистрофическими явлениями в сосцевидном отростке, а также дифференциально диагностические критерии воспалительных заболеваний среднего уха и зрительного носового проростка.

Высокое разрешение и высококачественная трехмерная реконструкция позволили оптимально и краткосрочно выбрать успешную консервативную схему терапии, определить и спланировать объем и режим хирургического вмешательства. Обследования, которые проводились в динамике, помогли определить эффективность консервативной терапии и хирургического вмешательства, предотвратили возникновение осложнений.

Ключевые слова: мастоидит, компьютерная томография, диагностика.

MULTISLICE COMPUTED TOMOGRAPHY WITH 3D-RECONSTRUCTION IN DIAGNOSTIC OF MASTOIDITIS

Sharmazanova O., Demidova O., Souissi Hamza

Abstract. The study was aimed to assess the diagnostic values of the multislice computed tomography with 3d-reconstruction in diagnostic of mastoiditis.

The presented study was not linked to any registered research topic.

With the help of MSCT method, we examined patients at the following bases:

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2. Center for reproductive and rehabilitation medicine (University Clinic) Odessa National Medical University.

Most surveys were conducted for operative and conservative treatment. We performed 50 studies. Men accounted for 52% (26 patients), women 48% (24 patients). The patient's age ranged from 18 to 90 years.

The examination of the temporal bones was performed on a 16-slice computed tomography machine TOSHIBA Aquillion, Japan. Scanning parameters: scanning in 3 planes, thickness from 1 mm to 5 mm. The patient's head is fixed to exclude dynamic artifacts. When analyzing MSCT images using bone and soft tissue modes of 3D-reconstruction, measure bone density and density of the mastoid process their content using the program Efilm. The criteria for evaluation is sufficient pneumatization of mastoid cells, cell density on the mastoid, lack of content and pathological inflammatory changes in mucosal cells.

All 50 patients examined with multislice computed tomography were divided into 6 groups.

Patients were divided into 2 groups according to the duration of the inflammatory process.

The first group included 23 patients (46%) with acute mastoiditis.

The second group included 15 patients (30%) with chronic mastoiditis.

The third group included 3 patients (6%) with post-traumatic mastoiditis.

Were formed 2 groups with complications of mastoiditis.

The fourth group included 4 patients (8%) with external cranial complications: labyrinth, hearing impairment, paralysis of the facial nerve.

The fifth group included 1 patient (2%) with intracranial complications: the spread of an infection in the brain that causes meningitis, encephalitis, abscess of different parts of the brain, phlegmons in the neck region.

Sixth group – control. The sixth group included 4 patients (8%). The control group was formed from patients who were sent for examination and found to be healthy.

Diagnostic studies performed by a 16-slice computed tomograph TOSHIBA Aquillion, Japan, it was possible to obtain a high-quality image of the soft tissues of the mastoid, to determine the localization and density of pathological formations. The possibility of multislice computed tomography with 3D-reconstruction allows us to estimate the state of bone tissue of the temporal bones, including the detection of purulent melting of the bone, to determine the density of pathological content and pneumatization of the cells of the mastoid, which is the most informative in patients with acute and post-traumatic mastoiditis.

Due to the method of multislice computed tomography, the quality of differential diagnostics of the peculiarities of the structure of the mastoid with inflammatory and dystrophic phenomena in the mastoid was improved, and differential diagnostic criteria for inflammatory diseases of the middle ear and the optic nasal sprout were developed.

High resolution and high-quality three-dimensional reconstruction allowed the optimal and short-term to choose a successful conservative therapy scheme, to determine and plan the volume and mode of surgical intervention. Surveys that were performed in a dynamic, helped to determine the effectiveness of conservative therapy and surgical intervention, prevented the occurrence of complications.

Key words: mastoiditis, computed tomography, diagnosis.

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МАЛОІНВАЗИВНІ ХІРУРГІЧНІ МЕТОДИ ЛІКУВАННЯ ХРОНІЧНОГО ПЕРФОРАТИВНОГО ГАЙМОРИТУ

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Зв'язок публікації з плановими науково-дослідними роботами. Робота є фрагментом науково-дослідної роботи «Інтегративно-диференційоване обґрунтування вибору оптимальних методик оперативних втручань та обсягу лікувальних заходів при хірургічній патології щелепно-лицевої ділянки», № державної реєстрації 0116U003821.

Вступ. Захворювання приносових пазух завжди становили важливу медичну проблему [1,2]. Із них для хірургічної стоматології особливо актуальною є патологія верхньощелепної пазухи, зокрема, питання профілактики та лікування одонтогенного гайморита [3,4]. Насамперед, це зумовлено його значним поширенням у клінічній практиці, яке стало довічним предметом дискусії між лікарями-оториноларингологами та хірургами-стоматологами. Чинниками значного розповсюдження даної патології з одного боку є анатомо-фізіологічні особливості будови гайморової пазухи, складність діагностики та чіткого визначення етіології (одонтогенного чи іншого походження) гайморита, а з другого – не залежні від лікаря причини поширення цього захворювання, як, наприклад, відсутність планової санацій певних груп населення, а також нестабільний економічний стан в країні.

За даними різних авторів гайморити одонтогенного походження складають 24-99% від усіх синуситів; такий розбіг у відсотках і свідчить про складність діагностики з чітко визначеною етіологією процесу.

Основними чинниками запалення гайморових пазух одонтогенного походження є перфорація дна гайморової пазухи під час видалення зубів, анатомо-фізіологічні особливості будови гайморової пазухи, коли корінь або корені проникають у порожнину гайморової пазухи. У цьому разі, не залежно від професіоналізму лікаря стоматолога-хірурга, у будь-якому