



Case Report

Dysfunction Tinnitus is an Otorhinolaryngological Symptom caused by Disorders in the Temporomandibular Joint (TMJ)

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Abstract

In general, patients have difficulty defining and differentiating pain and noise localized in the area around the ear. The exact determination of these symptoms and their differentiation that belong to the ear, or are disorders in the TM articulation, is usually achieved by close cooperation between the patient, the otorhinolaryngologist, and the dentist-gnathologist specialist. The collaboration between the two specialists is carried out according to the respective diagnostic protocols that manage to distinguish: "Tinnitus (noise in the ears) is an Otorhinolaryngological symptom or caused by disorders in the Temporomandibular Joint".

Female patient G.R. aged 22 presented complaining that she had noises in his right ear for several months, which in this case is considered a chronic symptom. She explained to both doctors that the noises were high pitched, pulsating causing progressive hearing loss in the ears. This fact has affected the quality of her life by disrupting her sleep, mood, and the appearance of many concerns. The presence of a constant noise in the ear affects the patient's psychology, negatively influencing his spiritual state. Tinnitus is a symptom of patients with vestibular pathology of Meniere's syndrome.

Another symptom that the patient referred to was the pain in the ear, which became more pronounced during the movement of the mandible. This type of pain is one of the symptoms that differentiates ear pathologies from TMJ disorders.

To determine an accurate diagnosis of the pathology of the ear and that of TMJ disorders, her was recommended to perform a series of examinations such as: A hearing test (audiogram), blood analysis (checkup), panoramic-cephalometry radiographic images, Magnetic Resonance Images (MRI) and Computed Tomography (CT) Scanner.

Based on the results of these analyses and the consultations of the two specialists with the patient's referrals, then was concluded that the patient suffered from disorders of the TMJ, and also had some problems with the pain caused by the noises in the ears. The patient underwent combined therapeutic-prosthetic treatment using micro-relaxants and prosthetic treatment was performed with relaxing splints, which continued for several months and the results were quite positive for a long-term period.

Key Words: Otorhinolaryngologist; Dentist-gnathologist; Tinnitus; Temporomandibular disorder; Frequent symptom.

Introduction

Tinnitus is usually described as a ringing sound, but some people hear other types of sounds, such as rustling leaves, rumbling like a pressure cooker, or buzzing. Tinnitus is common, and surveys estimate that 10-25% of adults have it. The causes of tinnitus are unclear, but most people who are affected by this symptom have some degree of hearing loss. For adults, tinnitus can improve or even go away over time, but in some cases, it gets worse, and when it lasts over three months or more, special attention should be paid as it can become chronic [1].

Some individuals with tinnitus problems are affected by their inability to sleep or concentrate. In more severe cases tinnitus can lead to anxiety or depression. Currently, there is no cure for tinnitus, but there are ways to reduce its symptoms. Common approaches include the use of sound therapy devices (including hearing aids), cognitive and behavioral therapies, and the use of medications. Studies from the contemporary literature during the previous years were focused on the treatment and alleviation of otologic symptoms and were limited to randomized clinical trials, case-managed case study reports, and prospective studies.

Tinnitus symptoms can vary significantly from person to person. Usually, patients can hear unfamiliar sounds (noises) in one ear and almost every hour in both ears. The sounds can mainly be in the form of ringing, buzzing, roaring or screeching. Sounds can be soft or high-pitched. It may come and go or be present all the time in a continuous manner [2]. Most cases of tinnitus are subjective, meaning that only the individual in question can hear those sounds.

In the case of disorders of the TM articulation, the crackling in that area is heard by the individual himself, by the doctor, but also from a distance [3]. In the case of ear pathologies, the sound can pulsate rhythmically and often at the time of the patient's heartbeat. In these cases, a doctor may be able to hear the sounds with a stethoscope, and if so, then it is considered to be objective noise in the ears, and this type of noise is clinically treatable since the sound, in this case, is related to hypertension and is eliminated with its stabilization.

The most important symptoms of disorders in the TMJ are stuttering, pain in the joint, and difficulty in moving and opening the mouth. From the pronounced pain in the joint, we also have atypical movement of the mandible [3]. These changes that are observed in the kinematics of the movement of the mandible, as well as the presence of pain around the articulation and crepitations make the diagnosis difficult and often lead to the application of non-rational and wrong treatment methods [3]. This often causes patients with various pathologies of TMJ disorders to be accompanied by neuralgic pain, otology, facial pain, noise in the ear (tinnitus), dizziness, etc., to which they turn to doctors of

different profiles, who are not always familiar with the specifics of dental diseases and especially TMJ pathology. The most frequent pathology encountered in dental practice is the non-functional disorder of this joint. Today, in contemporary literature, the term: "Intra-articular disorders of the Temporomandibular joint" [4] is widely used for these pathologies with different names spread over time.

To identify the nature, and origin of pain and common pathologies that have otorhinolaryngological diseases such as Tinnitus, Delirium, etc., with intra-articular disorders of the TM articulation, it is necessary to undertake some additional diagnostics, specifically:

For TM articulation disorders:

X-ray panoramic-cephalometry radiographic images, Computed Tomography (CT)-Scanner radiographic images, as well as Magnetic Resonance Imaging (MRI), which together can reveal structural anomalies of the TM joint such as: arthritis or displacement of the condyle disc, subluxations and damage to the condyle disc.

For Tinnitus and other ORL symptoms

Magnetic Resonance Imaging (MRI), Computed Tomography (CT) of the head/ear/neck, etc., which can confirm whether there are changes for structural abnormalities, such as acoustic neuroma or vascular problems, etc. [5].

Today in contemporary literature there are several methods for the treatment of ORL disease which can be divided into two categories: a) methods aimed at directly reducing the intensity of noise in the ears, and b) methods aimed at alleviating the annoyance associated with the noises in the ears. The first methods include pharmacotherapy compression and electrical stimulation, and the second methods include pharmacotherapy, cognitive and behavioral therapies, voice therapy, habit therapy, massages, and the use of hearing aids [6,7].

When Tinnitus has an underlying physiological cause and symptoms can persist for months or even years, then some of the treatments your doctor may recommend are:

- 1) Sound therapies, which are based in part on the view that ringing in the ears stems from changes in the neural circuits of the brain that have caused the hearing loss. Some evidence suggests that exposure to sound can reverse some of these neural changes and help silence tinnitus. Also, this method can be called functional by masking the sounds of tinnitus and helping the individual to get used to them, or in more special cases by distracting the individual from the irritations of the noise in the ears.
- 2) Hearing aid placement is one of the main treatment options for patients with tinnitus or those with hearing loss. The devices amplify external noises allowing the individual to be better engaged with the world around them and making tinnitus less bothersome.

Disorders in the TM system can appear with completely different symptoms than those related to the ears and hearing system since in these cases hearing is not affected and there is no noise in the ear. Pain in the case of disorders of the TM joint occurs only during the movement of the mandible. In the case of the sensation of blocked ears accompanied by pain, it can be attributed to the dysfunction of the Eustachian tube and tensor muscles. In addition, both tensor muscles such as Veli Palatine and Tympanic Nerve are innervated by the trigeminal nerve, causing otological symptoms due to stimulation of the brain [3,9]. Disorders of the TM joint can cause pain in the jaw joint and the muscles that control jaw movement (Figure 1) [3].

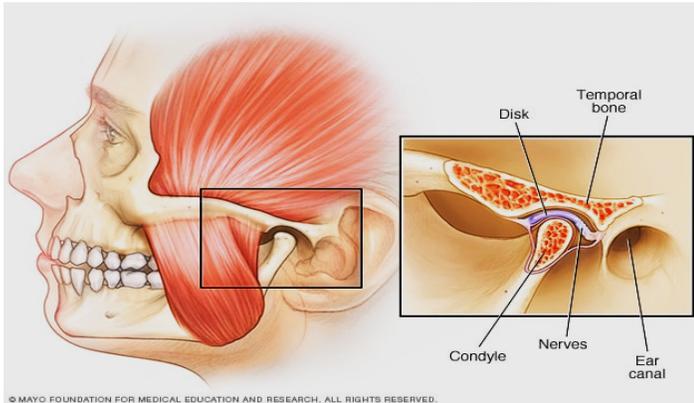


Figure 1: Symptoms of reflected pain near the ear area caused by Tinnitus or TMJ disorder.

The pain can be caused by several factors, among which we can mention habits such as bruxism (grinding the teeth), chewing gum for a long time, and non-occlusal parafunctions such as biting the nails, lips, and cheeks, which lead to muscle spasms that are accompanied by pain and TM joint disorders associated with fibromyalgia phenomena, osteoarthritis and injury to jaws. In most cases, the pain and discomfort associated with disorders of the TM joint last only for a limited time, *i.e.* only in cases when the individual moves the mandible. The combined treatment of this therapeutic prosthetic pathology using relaxing splints is very effective in treating the symptoms of TMJ dysfunction. Surgical treatment is usually the last resort since conservative methods have not given the right result [3,10,11].

Patient treatment plan and study objectives

After long-term consultations between otolaryngologists and dentist-gnathologist specialists regarding the presence of pain in

the area around the ear, the specialist doctors have decided on how to treat this symptom, which determines the objective of the following study:

A differential diagnosis between the pathology of the ear and the dysfunctional disorder of the TMJ should be determined in the case of the reported study, and which was the main objective of the study, which should be carried out by a complete analysis:

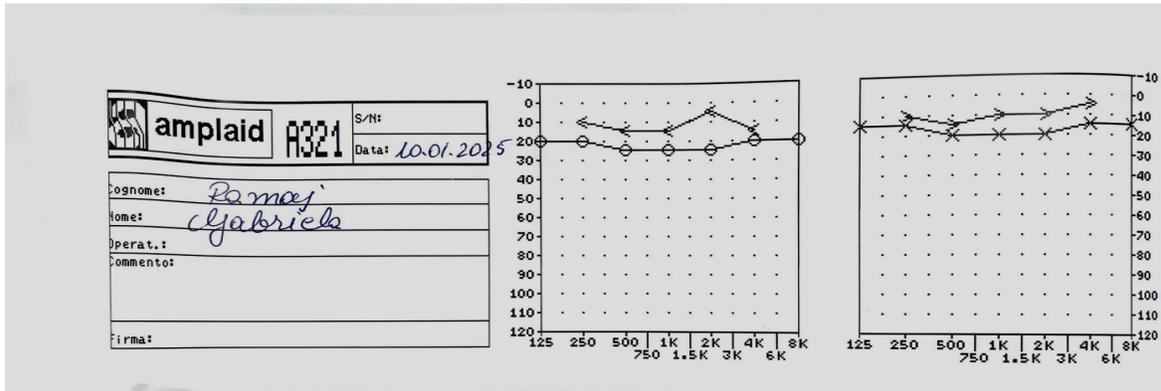
- 1) We had to explain and determine whether there is any relationship between the severity of tinnitus symptoms that distinguish ear diseases from dysfunctional disorders of the TMJ.
- 2) The methods used to treat each of the above pathologies realized are those appropriate methods for the treatment and for recovering of the patient?

Material and Method

The female patient G. R., 22 years old from the rural areas of Tirana, presented to the Otorhinolaryngological Department, near the University Hospital Center of Tirana (UHCT) for constant pain in both ears, which in this case was considered chronic. This condition started almost a year ago and, referring to the current situation, the noises and pains increased mostly in moments of daily stress. She explained to both doctors that the sounds were constantly elevated and pulsating with a progressive loss of hearing in both ears. This fact hurt her quality of life, disrupting her sleep and mood.

The noises in the ears have affected both the physical condition and the psychological condition of the patient, who reported that the noises in the ears were boring, accompanied by insomnia, decreased concentration, and mood. Tinnitus is a symptom of patients with vestibular pathology, Meniere's syndrome, etc. Pain, which is the most frequent symptom, was also referred to by the patient as an irritating condition, which distinguishes it from jaw joint pain. What distinguishes wrist pain from ear pain is that it occurs during the movement of the lower jaw-mandible. During the movement of the mandible, the pain in the articulation increased and the noise in the left ear decreased continuously.

The ORL doctor recommended the patient be examined by audiological tests and blood tests (checkup), which showed that there were no essential changes and presented below.



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Emri i testit	Rezultati / Njësia	Vlerësimi	VI.Referente	Materiali / Metoda	Lab.
Gjak Komplet					
Seria e kuqe					
*RBC	4.34 x10 ⁶ /uL		4 - 5.6	WB-EDTA Flow Cytometry	103
*Hgb	14.5 g/dL		12.1 - 15.9	WB-EDTA Absorption Spectrophotometry	103
*HCT	41.0 %		37 - 46	WB-EDTA Calculation	103
*MCV	94.5 fL		80 - 100	WB-EDTA Flow Cytometry	103
MCH	33.4 pg		27 - 34	WB-EDTA Calculation	103
MCHC	35.3 g/dL		32 - 36	WB-EDTA Calculation	103
RDW	12.4 %		10.8 - 14	WB-EDTA Calculation	103
Seria e bardhe					
*WBC	4.9 K/uL		4 - 10.5	WB-EDTA Flow cytometry	103
Neutrofile (Absolute)	2.5 K/uL		1.6 - 7.56	WB-EDTA Flow cytometry	103
Limfocite (Absolute)	1.7 K/uL		1 - 4.72	WB-EDTA Flow cytometry	103
Monocite(Absolute)	0.5 K/uL		0.12 - 0.84	WB-EDTA Flow cytometry	103
Eosinofile (Absolute)	0.1 K/uL		< 0.52	WB-EDTA Flow Cytometry	103
Basofile (Absolute)	0.0 K/uL		< 0.1	WB-EDTA Flow cytometry	103
Neutrofile	51.3 %		40 - 72	WB-EDTA Flow cytometry	103
Limfocite	35.3 %		25 - 45	WB-EDTA Flow cytometry	103
Monocite	10.10 %	I Larte	3 - 9	WB-EDTA Flow Cytometry	103
Eosinofile	2.5 %		< 5	WB-EDTA Flow Cytometry	103
Basofile	0.9 %		< 1	WB-EDTA Flow cytometry	103
Trombocite					
*PLTs	238 K/uL		150 - 400	WB-EDTA Flow Cytometry	103
PDW	13.0 fL		8.5 - 25	WB-EDTA Calculation	103
MPV	10.1 fL		7.2 - 11	WB-EDTA Calculation	103

Table 1: Blood analysis (check-up) for patient G.R. with Tinnitus.

Tinnitus often represents a symptom of a disease process closely related to various otological causes, but not least TM articulation disorders.

Scientific studies in this field have used the latest technology to measure and examine noise in the ears of the auditory nerve and auditory tracts of the brain. Tinnitus is a symptom that is commonly associated with a wide range of medical problems such as middle and inner ear problems, blood circulation, metabolic disorders, and side effects of medications [12].

Tinnitus is a widespread phenomenon that has affected at least 14% of the European population, 14% of men and 15% of women. This symptom causes high costs in health care, especially when the disturbance of noise in the ears is present as severe tinnitus and in Europe fluctuates in the values of 1-2%. Tinnitus as a severe symptom fluctuates in values of 1.0% in men and 1.4% in women, and the prevalence of tinnitus increases significantly with age and the deterioration of a person's hearing condition. The severity of tinnitus symptoms is positively related to the use of healthcare resources [13].

In our case study reported during the search, we evaluated the relationship between blood parameters and the dominant influence of stress in the blood sample of patient G.R with tinnitus also presented in the discussions. Tinnitus matching by audiological

examination was used to approximate psychoacoustic tinnitus parameters, a test which was performed by the ENT specialist by adjusting the sounds presented to the patient through headphones in such a way that the sounds were as close as possible to the type and frequency of the sound and the subjectively perceived level of ringing in her ears.

For the tinnitus and other ORL symptoms for patient G.R, a diagnostic procedure with Magnetic Resonance Imaging (MRI) performed for the head//ears/neck was recommended to ensure that there are changes with structural abnormalities, such as acoustic neuroma, vascular problems, or disc displacement that reflect in the ear pain identified with tinnitus, etc. MR imaging of the TM joint was one of the methods of choice for examining TMJ disorders. In our case, we hypothesized to detect comorbid TMJ disorders of any acceptable relationship using MR images. Thus, in the present study, we aimed to comparatively describe the associations of MR images of patients with TM articulation disorders with tinnitus, identifying the most common TM articulation changes and to find the existence of a relationship between the severity of TMJ disorders with Tinnitus [3,5].

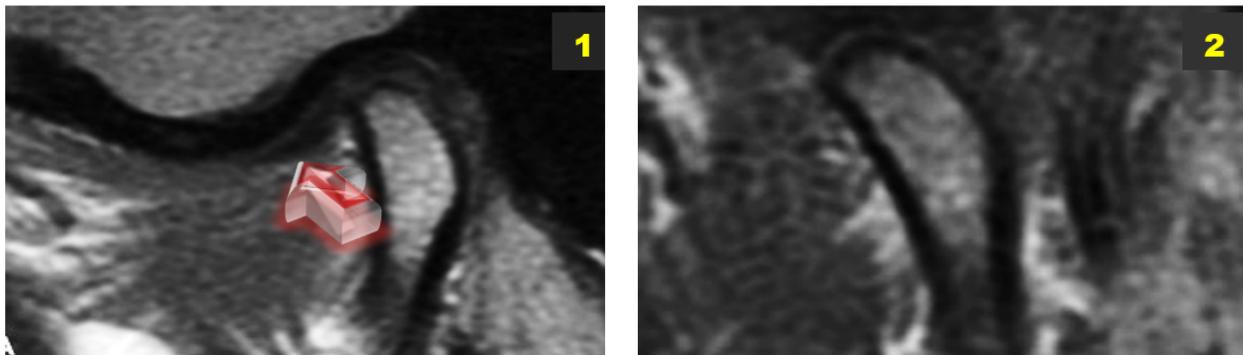


Figure 2: Left MR image of the TMJ with anterior disc displacement (arrow) and reduction in the closed (1) and open (2) mouth position.

The examination according to the MR images showed that in our patient, a displacement of the disc with reduction was found, which was the main cause of the crackling and noise in the TM articulation. However, an important distinction had to be made between the symptoms caused by the displacement of the disc with the reduction in tinnitus, as this would affect the correct treatment of the patient G.R.

To reach the proper objective of the patient's treatment, the doctors recommended the patient perform a panoramic-cephalometric 3D X-ray image, as well as a radiographic image using a Computed Tomography (CT) scanner to further explore the relationship between Tinnitus and TMJ disorder [14,15].

Non-specialist doctors are not so familiar with the characteristic signs of TMJ dysfunctional syndrome, etc., and therefore rarely recommend radiological examinations to patients. A specialist dentist-gnathologist of the TMJ asks for those images when the patient shows symptoms or visible signs of disorders in the TM. The TMJ can be in varying degrees of arthritic damage that may not be fully seen on standard panoramic dental radiographs. Experienced specialists can detect TMJ disorders on standard panoramic imaging, however, X-ray and cone beam imaging can be considered a "standard of care" for TMJ diagnosis and treatment [16].

Panoramic-cephalometric images fail to reveal the functional status of the TMJ, as these images have a higher specificity,

and relatively low sensitivity, compared to Computed Tomography (CT) images. While some other authors consider clinical data of greater importance than panoramic images for patients with TMJ disorders. However, several other authors have suggested panoramic-cephalometric radiography as a good imaging modality for visualizing TM articulation [17].

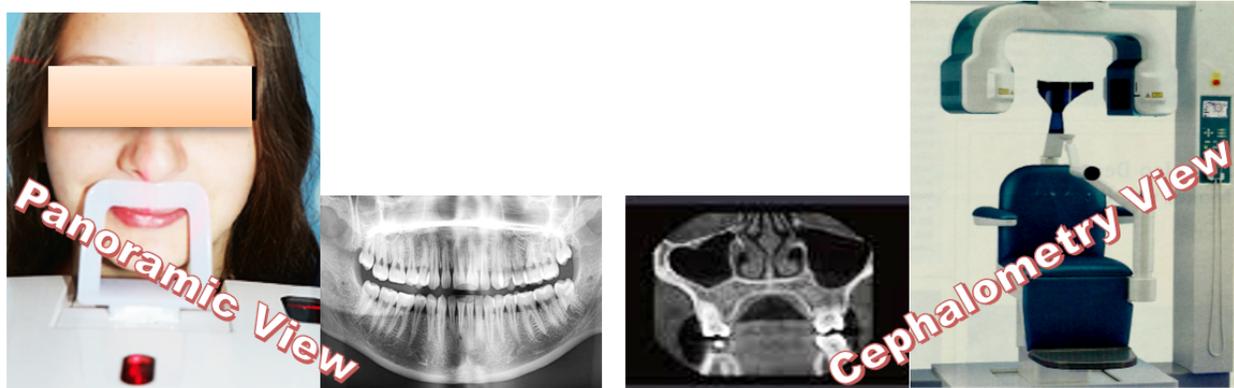


Figure 3: Panoramic-cephalometric view (jaw-skull) of patient G.R with the relevant equipment.

Today, Computed Tomography (CT) in the diagnosis of TMJ disorders and Tinnitus symptoms has emerged as a valuable imaging modality in the diagnosis and management of TMJ disorders and Tinnitus symptoms.

Disorders in the articulation of the TM often include functional damage in the jaw joint such as the disc is displaced anteriorly (in front of the noon position) in the position of the closed mouth, an image that is visible in the sagittal plane [3].

In our study, we recommended patient G.R. perform a head/neck/ear scan with the Computed Tomography (CT) imaging technique, which method provides high-resolution and detailed images of hard tissues such as bones and joints with the advantage of high spatial resolution for detailed bone structures, etc., the purpose of which is to finalize the nature and origin of the pain she was complaining about.



Figure 4: CT Scanner device in the German Hospital in Tirana, where the G.R patient carried out scanner diagnosis.

The CT images device, the Scanner was manufactured by the German Company Siemens Som Atom. Model: Medical X-Ray System, Serial Number: 5533620/10200306, and consists of 128 slices. The methodology followed to perform a head/neck/ears examination, the voltage applied to the device is 120 kV with a bunch index $T_b=2$ cm and a cut of 5mm, with an average scan length L . head=20 cm with a current of 300mA. The 4D workflow practiced on these images eliminates manual reconstruction steps for 3D reconstructions at speeds up to 20 images/sec. With these data it turned out that we would have a head radiation dose index $CTDI=0.223$ milli Gray/milliamperes a body dose index, and $CTDI=0.138$ milli Gray/milliamperes, which contribute to obtaining images of a fairly high quality, from which we claimed to find a link between TM articulation disorders and tinnitus symptoms.

Results and Discussions

Based on the results of the diagnostic tests recommended by the two specialist doctors performed by the patient G.R. as: examination of the audio test, and blood analysis (check-up), we found:

a) Audiological measurements were performed with the Euro medical audio device, Model-APO, Serial Number: 0504153, and the audiometry values in dB are presented below. The right ear of the patient is 5-25 dB, where the value of 25 dB can be categorized as initial hearing loss, while the left ear is 5-20 dB, and in both cases, the audiometry is considered somewhat normal.

b) Tinnitus is a symptom that is usually associated with a wide range of medical problems, such as problems with the middle or inner ear, blood circulation, metabolic disorders, or side effects of medications. If the blood analysis for patient G.R shows specific problems that can be related to tinnitus, for example, it shows a lack of iron Fe^{+2} , Fe^{+3} , vitamins, especially vitamin B_{12} , or mineral microelements such as zinc, then suitable supplements can be recommended for her treatment. Hypoglycemia or uncontrolled diabetes can affect tinnitus and, in this case, the doctor should prescribe medication to control blood glucose levels. The value of monocytes according to the analysis was high at 10.10%, when the limit values were: 3-9%. Their high number in the blood is called monocytosis and directly affects the patient's health, indicating the presence of a health problem. Monocytes are white blood cells that play an important role in the immune system by helping to fight infections and eliminate damaged tissue. Their high number indicates that the body is in a chronic inflammatory state and can damage the patient's organs and tissues. This high level of monocytes is a signal that asks for the attention of a specialist doctor to determine the cause and prevent complications. The monocytosis treatment should be based totally on etiological diagnosis, and the specialists for this patient, keep track of an achieved multidisciplinary, to ensure an effective and fulfilled therapy as shown in our scientific research.

The main objective predetermined by us was to find a correlation between hearing ability with symptoms of tinnitus or disturbance that occurred during daytime activities using the collected data, as well as focusing on finding any possible relationship between blood parameters and audiological measures performed for both ears and in fact, a rather convincing relationship was found between these parameters.

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c) Tinnitus can make an important contribution to the treatment of patient G.R. in pain detection, therefore, it was suggested to perform a panoramic-cephalometric computed tomography X-ray cone beam image, 3D view and/or a Computed Tomography (CT) scan image to further explore the relationship between tinnitus and TM joint disorder. Experienced gnathologists can detect articulation disorders from standard panoramic images, however, panoramic-cephalometric imaging does not reveal the functional status of the connective joints and has a relatively low specificity and sensitivity compared to other diagnostic images [18]. Some authors consider the clinical findings of greater importance from panoramic images for patients with TMJ disorders, but some other authors suggest panoramic-cephalometric radiography as an important imaging modality for evaluations in the visualization of TMJ disorders. The 3D Panoramic device, with which panoramic-cephalometric images were made for patient G.R, was imported by the company "Kodak Trophy Digital Panoramic & Cephalometric System" with a maximum voltage of 90 kV and a maximum electric current of 12 mA, an average of 12 seconds for each examination procedure. Model: OPX 105 and serial number: VHBC 001.

d) For some ORL symptoms, a diagnostic procedure with Magnetic Resonance Imaging was recommended for patient G.R., which had to be performed for the head/ear/neck region to find out if there are structural changes and abnormalities, such as acoustic neuroma, vascular problems or disc displacement, which are reflected by pain in the ears identified as tinnitus. In this case, MR images were chosen by the ORL specialist as a method to detect TM articulation disorders. This fact served us for the diagnosis and treatment of disorders of the TMJ, because sometimes surgical intervention is considered to be performed if any bad passage is detected by MR images. TM articulation disorders can affect the ear and vestibular system through shared neural pathways, altered muscle function, and central nervous system sensitization, resulting in tinnitus, vertigo, and similar symptoms⁽¹⁹⁾. The findings from the magnetic resonance images in our case study for patient G.R. were related to changes in the morphology of the condylar, the morphology of the articular eminence, the morphology of the disc, the reduction of the displacement of the disc, condylar excursion and intra-articular changes, phenomena which were interpreted by specialist gnathologists and independent radiologists. Her prosthetic treatment included the use of relaxing, stabilizing-repositionable splints and relaxing medications, which were recommended to the patient.

e) Tinnitus is often associated with several complex conditions due to the close anatomical and neurological relationship between the TMJ and the structures of the ear along with the cranial nerve. In our study, we recommended patient G.R. to undergo a scan of the head/ear/neck region with the Computed Tomography (CT) imaging technique, which method provides high-resolution and

detailed images of hard tissues such as bones and jaw joints with high spatial advantage for detailed bone structures, etc., to finalize the nature and origin of the patient's pain as mentioned above [20].

The clinical data of the patient G.R. was evaluated by three otorhinolaryngological gnathologist and radiologist specialists, who have discovered through coronal images, differences and somewhat essential changes in the length and width of the internal acoustic canal between the left and right ear. From the measurements made at this location which is one of the most reliable indicators, it was concluded that the cochlea was anatomically completely normal. However, because of the presence of a normal cochlea and to differentiate it from other symptoms, it was considered reasonable to have an intact acoustic pathway the patient also measured the length of the basal curve in this, which resulted in slightly significant changes.

Medications such as glucosamine, chondroitin, and hyaluronic acid are used to treat the above symptoms. Finally, we came to the conclusion that dysfunction or irritations appearing with disorders in the TMJ lead to referred pain with sensory disturbances in the ear region due to these common neural networks.

Conclusions & Recommendations

1) Tinnitus often represents a symptom of a disease process associated with other factors. Recent scientific research implemented using the latest imaging technology and audio measurements for tinnitus-related examinations in the ears, auditory nerve, and auditory tracts of the brain have proven to be quite efficient. Our study was increasingly focused on exploring putative mechanisms related to brain function. The complexity of changes in the nervous system associated with tinnitus may explain why this condition is so resistant to specialized and long-term treatment.

2) Although in our study multiple therapeutic-medicinal modalities were applied, we did not reach any consensus regarding which of the above agents was the most effective. Sometimes, no treatment represents the best alternative and forces the specialist clinician to issue unnecessary prescriptions without being able to reassure the patient.

3) Treatments performed do not necessarily relieve tinnitus, accurate determination and diagnosis are two important elements in reducing the nuisance associated with tinnitus and preventing further hearing impairment. There are many randomized clinical trials conducted that have shown effects from the use of non-harmful medications that have been attributed in part to responses to patient sedation. However, we recommend that consultation with ORL specialists and gnathologists represent the most essential part of the treatment of Tinnitus and TM articulation disorders, regardless of the approaches and management adopted for a particular patient.

4) A well-informed explanation of Tinnitus, together with gaining confidence in its treatment, improves the physical and psychomoral condition of most patients over time. For those patients with persistent ringing in the ears, cognitive and behavioral therapy for this symptom, aided by intervention and pharmacological treatment, represents the most promising treatment regimen and is accompanied by other prosthetic treatments, which are applied in parallel and depending on the stages and steps of their realization to ORL symptoms and TM articulation disorders.

The treatment of patient G.R., with constant complaints of pain and ringing in the ears, was carried out by a specialist doctor in the Department of Otorhinolaryngology at Hospital University Center of Tirana (HUCT), and also by a dentist-gnathologist in close collaboration with radiologists. Medications such as glucosamine, chondroitin hyaluronic acid, etc. are used for their treatment. Prosthetic treatment included the use of relaxing, stabilizing-repositioned splints, which were recommended to be worn for about 12 months, enough time for the patient to return to normal, moving the mandible without pain, and eliminating the above symptoms.

Plagiarism: The study case report was designed and written by the authors presenting a significant contribution with an effort to ensure that the accuracy of the published parts of the cited literature sources is integrity with the approved norms and rules of the journal. We declare that for the drafting and revision of the paper we have strictly respected the rules of acceptance, and in terms of references and citations of the literature used in our scientific research, ethical and academic norms have been taken into account and respected.

Department & Institution: The data in which our case study is reported was collected from the research register of the Private Dental Clinic "QAFMOLLA" managed by Prof. Dr. Ruzhdie Qafmolla, as well as in cooperation with the "Albanian Eye Center", managed by Prof. Ali Tonuzi, Tirana, Albania.

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Consent on information: Written consent was obtained on the disclosure and use of personal data, and illustration photos in the scientific article from the patient G.R., who became a participant in this study report and agreed to publish the data and measurements performed.

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