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TRANZITORNI POREMEĆAJ GOVORA I GUTANJA BEZ EVIDENTNOG OŠTEĆENJA NERVA NAKON TOTALNE TIROIDEKTOMIJE

Uvod

Totalna tireoidektomija je jedna od najčešće izvođenih hirurških procedura u regiji vrata. Povećanje učestalosti dijagnostikovanja bolesti štitaste žlezde u asimptomatskoj fazi, u okviru rutinskih sistematskih pregleda, rezultiralo je većom stopom otkrivanja raznih benignih i malignih lezija koje, prema protokolu, zahtevaju totalnu tireoidektomiju. Najčešće indikacije za totalnu tireoidektomiju su benigna i maligna uvećanja u vidu difuznih ili multinodularnih struma, tireotoksikoza refraktarna na konzervativnu terapiju, toksični adenomi i maligni tumori (1). Postoperativne komplikacije nastaju zbog privremene ili trajne pareze laringealnih nerava, prvenstveno rekurentnog laringealnog nerva (RLN), a ređe (ili ređe prepoznato) superiornog laringealnog nerva (SLN), kako njegove spoljašnje tako i unutrašnje grane. Analiza velikog broja studija pokazala je da učestalost svih oštećenja RLN, kako morfoloških tako i funkcionalnih, varira od 0% do 38,4% (2). Zbog poteškoća u kliničkom prepoznavanju povreda superiornog laringealnog nerva (SLN) učestalost se kreće između 14% i 20% (3, 4). Pareza laringealnih nerava nakon operacije retko je rezultat direktne povrede nerava od strane hirurga, ali se češće javlja usled ishemije ili kompresije nerava usled manipulacije u hirurškom polju tokom procedure. Iako su većina tih povreda privremene, simptomi i klinički znaci su ozbiljni i utiču na vitalne funkcije pacijenta. Najteži simptomi uključuju otežano disanje, govor i gutanje, koji, ako nisu pravovremeno prepoznati i pravilno lečeni, mogu imati ozbiljne posledice. Lečenje pacijenata sa oštećenim funkcijama zahteva kreiranje individualnog protokola shodno svakom pojedinačnom slučaju. Proces praćenja i lečenja je dugotrajan i uključuje obezbeđivanje disajnog puta,

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optimalnu nutriciju, prevenciju aspiracione pneumonije i psihološku podršku tokom celog perioda lečenja.

Cilj ove prezentacije slučaja je da istakne mogućnost postoperativne pareze laringealnih nerava u odsustvu direktne jatrogene povrede i da naglasi značaj multidisciplinarnog pristupa u lečenju kako bi se postigli optimalni rezultati.

Prikaz slučaja

Pacijentkinja, starosti 73 godine, obratila se endokrinologu u martu 2024. godine zbog tegoba u vidu osećaja stezanja u vratu. Ultrazvučni pregled štitne žlezde verifikovao je uvećan levi lobus, koji dislocira traheju udesno sa dominantnim čvorom veličine 3x2,5 cm. U skladu sa protokolom, izvedena je aspiraciona biopsija tankom iglom (FNAB), sa citološkim rezultatom: Bethesda V. U ličnoj anamnezi navodi se depresija i hronična opstipacija.

Nakon adekvatne preoperativne pripreme, pacijentkinja je primljena na odeljenje opšte hirurgije. Operacija je izvedena u maju 2024. godine bez komplikacija. Intraoperativno, verifikovan je čvor veličine oko 3 cm u levom lobusu štitaste žlezde, koji je komprimovao i dislocirao traheju udesno. Lezija nije infiltrisala kapsulu štitaste žlezde, niti je verifikovana regionalna limfadenopatija. Izvedena je totalna tiroidektomija, uz verifikaciju i očuvanje oba rekurentna laringealna nerva i sve četiri paratiroidne žlezde. Postavljeni su drenovi u lože oba lobusa. U neposrednom postoperativnom periodu dolazi do razvoja izražene promuklosti, bez respiratornih tegoba. Prvog postoperativnog dana, prilikom započinjanja per os unosa, uočeno je postojanje zagrcnjavanja prilikom gutanja hrane i tečnosti. Odmah je obustavljen peroralni unos i konsultovan specijalista ORL. Nakon fibrolaringomikroskopije, ustanovljeno je da su obe strane larinksa nepokretne, sa respiratornim prostorom između zadnjih delova glasnica suženim na promer 3 mm. Test vrhom endoskopa potvrdio je odsustvo refleksnih mehanizama za zatvaranje glotisa. Primetno je bilo prelivanje salive u traheju na nivou glotisa. Zbog potpunog gubitka senzibiliteta u supraglotičnom delu laringsa i bilateralne nepokretnosti laringsa, predloženo je plasiranje nutritivne gastrostome ili postavljanje nazogastrične sonde uz traheostomiju kao prevenciju aspiracije hrane i tečnosti.

Tokom dalje hospitalizacije pacijentkinja je sve vreme bila u dobrom opštem stanju, respiratorno stabilna u miru i pri naporu. Rana zarasla per primam, drenovi izvađeni, redovno primenjivane mere konzervativne terapije. Laboratorijski nalazi zadovoljavajući, a RTG snimak pluća, rađen u više navrata, bio je uredan. Konsultovan je endokrinolog i uvedena je supstituciona terapija, kao i psihijatar zbog pogoršanja stanja depresije. Na kontrolnom pregledu ORL specijalista je utvrdio da su glasnice i dalje nepokretne, sa respiratornim prostorom 4–5 mm između zadnjih delova gla-

snica, testom senzitivnosti supraglotičnog regiona laringsa izazvan je refleks. Test prisilnog kašlja pokazao je blagu bilateralnu pokretljivost aritenoidnih hrskavica, dok se saliva i dalje prelivala u traheju na nivou glotisa. Nastavljeno je konzervativno lečenje, uključujući vežbe gutanja, što je dovelo do kliničkog poboljšanja, nakon čega je prevedena na totalni peroralni unos, sa adekvatnim gutanjem čvrste hrane. I dalje je povremeno imala epizode zagrcnjavanja prilikom gutanja tečnosti. Sve vreme hospitalizacije bila je respiratorno stabilna.

Iako je postignuto kliničko poboljšanje funkcije gutanja i adekvatan peroralni unos, dostupne dijagnostičke metode nisu pokazale značajan oporavak nervne funkcije. Zbog i dalje prisutnog rizika od aspiracije i mogućih komplikacija odlučeno je da se izvrši traheostomija. Pacijentkinja je bila obaveštena o indikaciji za traheostomiju tokom lečenja, ali je nakon konsultacija sa porodicom izričito odbila proceduru. Tri nedelje nakon operacije pacijentkinja je otpuštena na dalje kućno lečenje. Pri otpustu, pacijentkinja je bila hemodinamski i respiratorno stabilna, sa zadovoljavajućim peroralnim unosom i bez respiratornih tegoba. Tokom redovnih kontrola pacijentkinja je izveštavala o adekvatnom oralnom unosu hrane, uz primenu vežbi gutanja. Kontrolne fiberlaringomikroskopije pokazale su postepeni oporavak funkcije. Do kraja jula 2024. godine postignut je potpuni oporavak govora i funkcije gutanja.

Diskusija

Brojni faktori rizika za razvoj postoperativne pareze ili paralize laringealnih nerava su identifikovani, uključujući starost preko 65 godina, prethodne operacije u području vrata, maligne lezije, velike strume, ASA status, poremećaje faktora koagulacije i povišene azotne materije (kreatinin veći od 120 za muškarce i 110 za žene) (1, 5).

Privremene promene u kvalitetu glasa nakon totalne tireoidektomije javljaju se kod 38% do 87% pacijenata, dok se trajne promene javljaju u 13% do 35% slučajeva (6, 7). Privremene teškoće sa gutanjem javljaju se u oko 80% slučajeva, dok u oko 20% pacijenata ostaju trajno prisutne. Najozbiljniji problemi nastaju zbog oštećenja RLN. Privremeno oštećenje RLN javlja se u 1,4% do 38,4% slučajeva, dok trajno oštećenje varira od 0% do 18,6% (8, 9, 10, 11). Zbog teškoća u kliničkom prepoznavanju povrede superiornog laringealnog nerva (SLN) učestalost se kreće između 14% i 20% (3, 4). Iako je direktna povreda nerva tokom operacije retka, ona predstavlja najveći strah svakog endokrinog hirurga. Najčešći uzroci ovih komplikacija su povezani sa samom hirurškom procedurom i uključuju indirektnu povredu nerva usled ishemije ili kompresije izazvanog manipulacijama u hirurškom polju. Takođe, pareza može nastati kao rezultat dekompresije nerva koji je prethodno bio komprimovan velikom strumom, postoperativnim hematomom koji se razvio u loži štitaste žlezde, ili, ređe, povredom glasnica tokom endotrahealne intubacije. Međutim, postoje opisani slu-

čajeve u literaturi kod kojih su se postoperativni simptomi pareze laringalnog nerva pojavili u odsustvu navedenih uzroka (12).

Simptomi pareze laringalnih nerava manifestuju se u različitim oblicima, od blage promuklosti, promena u kvalitetu glasa, do ozbiljne disfonije, stridora, gušenja i disfagije. U najtežim slučajevima potvrđuje se paraliza glasnica, pri čemu glasnice ostaju u medijalnom položaju, što rezultira insuficijentnim respiratornim prostorom i zahteva hitnu traheostomiju. Disfagični simptomi onemogućavaju adekvatan unos hrane, te ako postoji nepotpuno zatvaranje epiglotisa može doći do aspiracije hrane i salive u traheobronhijalno stablo, što za posledicu ima aspiracionu pneumoniju (13).

Postoperativne dijagnostičke metode uključuju fiberoptičku faringolaringomikroskopiju, indirektnu laringoskopiju, videolaringostroboskopiju (VLS), EMNG analize, kao i simptome koje pacijent prijavljuje. U većini studija, dijagnoza oštećenja laringalnog nerva postavlja se isključivo na osnovu laringoskopski potvrđene paralize glasnica indirektnom laringoskopijom (5, 14, 15). Videolaringostroboskopija (VLS) se koristi za detaljan pregled malih promena u pokretljivosti glasnica i analizu fizioloških i patoloških karakteristika vibracije glotisa. Takođe je moguće posmatrati morfologiju i izgled glasnica: boju, zapreminu, vaskularizaciju, integritet i prisustvo lezija (3, 4).

Lečenje pacijenata sa oštećenim funkcijama disanja, govora i gutanja zahteva multidisciplinarni i individualizovani pristup. Intenzivna konzervativna terapija uključuje kratkoročnu primenu kortikosteroida za smanjenje edema i upale, uz kontinuirano praćenje vitalnih parametara, kao što su saturacija kiseonikom, puls i krvni pritisak. Za pacijente sa značajnim oštećenjem funkcija gutanja unos hrane se privremeno obustavlja, a enteralna ishrana se obezbeđuje putem nazogastrične sonde ili gastrostome kako bi se osigurao adekvatan unos kalorija i hranljivih materija. Kod pacijenata sa ozbiljnim respiratornim tegobama, kao što su stridor i respiratorna insuficijencija, neophodne su invazivne hirurške procedure radi obezbeđivanja adekvatne ventilacije. Istovremeno, primena fonijatrijskih vežbi igra ključnu ulogu u rehabilitaciji glasa, smanjenju disfagičnih tegoba i poboljšanju kvaliteta života pacijenta.

Intraoperativni neuromonitoring (IONM) je napredna dijagnostička procedura koja ima najznačajniju ulogu u protekciji laringalnih nerava tokom izvođenja složenih hirurških procedura kao što je totalna tiroidektomija. Ova metoda je pokazala značajno smanjenje učestalosti postoperativnih komplikacija, uključujući poremećaje funkcija govora i gutanja, koji mogu ozbiljno uticati na kvalitet života pacijenata. Uprkos dokazanim prednostima, IONM još uvek nije postao standardna praksa u mnogim zdravstvenim institucijama, uglavnom zbog tehničkih izazova, potrebe za specijalizovanom opremom i finansijskog opterećenja koje nosi njegova implementacija. Međutim, uključivanje IONM-a u rutinsku kliničku praksu ima potencijal da značajno poboljša bezbednost pacijenata i hirurške ishode. Kontinuiranim praćenjem funkcije laringalnih nerava tokom operacije IONM omogućava hirurzima da detektuju rane znakove disfunkcije nerava, čak i kada ne postoje vidljivi morfološki znakovi

oštećenja. Rano otkrivanje je ključno, jer pomaže u prevenciji bilateralne povrede laringealnih nerava, ozbiljne i životno ugrožavajuće komplikacije koja može dovesti i do trajnog invaliditeta. U slučajevima kada se detektuje oštećenje laringealnog nerva sa jedne strane IONM pruža priliku za modifikaciju hirurškog pristupa, kao što je izvođenje tiroidektomije u dva akta. Potencijal IONM-a da poboljša hiruršku preciznost, smanji rizik od oštećenja nerava i podrži oporavak naglašava njegov značaj u savremenoj hirurgiji. Uvođenje njegove upotrebe u zdravstvenim institucijama ne bi samo podiglo standard zdravstvene nege, već bi značajno doprinelo smanjenju hirurških komplikacija i poboljšanju dugoročnih ishoda lečenja (16, 17).

Tokom perioda oporavka multidisciplinarni pristup je ključan, uključujući lekare različitih specijalnosti, kao što su anesteziolozi, ORL specijalisti, hirurzi, fonijatri i nutricionisti. Ova saradnja osigurava optimalnu negu pacijenata i omogućava prilagođavanje protokola lečenja svakom pacijentu ponaosob. Pored medicinskih intervencija, posebna pažnja posvećuje se psihološkoj podršci pacijentima, jer poremećaji disanja, govora i gutanja mogu značajno uticati na emocionalno stanje i kvalitet života. Edukacija pacijenata i njihovih porodica o važnosti rehabilitacije i vežbi, kao i redovnih kontrolnih pregleda, ključna je za dugoročni uspeh lečenja (18, 19, 20).

Zaključak

S obzirom na to da najteže komplikacije utiču na vitalne funkcije pacijenata i zahtevaju brzu dijagnozu i hitnu terapiju, ključno je da se ovakvi hirurški postupci izvode u ustanovama koje su opremljene za pružanje multidisciplinarnog pristupa, uz angažovanje stručnjaka iz različitih medicinskih oblasti.

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TRANSIENT SPEECH AND SWALLOWING DYSFUNCTION WITHOUT EVIDENT NERVE INJURY FOLLOWING TOTAL THYROIDECTOMY

Introduction

Total thyroidectomy is one of the most common surgical procedure performed in the neck region. The increasing frequency of diagnosing thyroid diseases in the asymptomatic phase, as part of routine medical exams, has resulted in a higher rate of detecting various benign and malignant lesions that, according to the protocol, require total thyroidectomy. The most common indications for total thyroidectomy are benign enlargements in the form of diffuse or multinodular goiters, thyrotoxicosis refractory to conservative therapy, toxic adenoma, and malignant lesions. (1)

Postoperative complications occur due to temporary or permanent paresis of the laryngeal nerves, primarily the recurrent laryngeal nerve (RLN), and less frequently (or less commonly recognized) the superior laryngeal nerve (SLN), including both its external and internal branches. Analysis of a large number of studies has found that the incidence of all RLN damage, both morphological and functional, ranges from 0% to 38.4%. (2) Due to the difficulty in clinically recognizing injuries to the superior laryngeal nerve (SLN), the incidence range is between 14% and 20%. (3,4) Paresis of the laryngeal nerves after surgery is rarely a result of direct nerve injury by the surgeon, but more often occurs due to ischemia, compression, and swelling of the nerve due to manipulation in the surgical field during the procedure. Although most of these injuries are temporary, the symptoms and clinical signs are serious and affect the vital functions of the patient. The most severe symptoms include impaired breathing, speech, and swallowing, which, if not promptly recognized and properly treated, can have severe consequences. The treatment of patients with impaired functions requires creating an individual protocol for each case. The monitoring and

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treatment process is long-lasting and includes securing the airway, optimal nutrition, prevention of aspiration pneumonia, and psychological support throughout the entire treatment period.

The aim of this case presentation is to highlight the possibility of postoperative paresis of the laryngeal nerves in the absence of direct iatrogenic injury and to emphasize the importance of a multidisciplinary approach to treatment in order to achieve optimal treatment outcomes.

Case Presentation

A 73-year-old female patient presented to an endocrinologist in March 2024 due to complaints of a sensation of tightness in the neck. Ultrasound examination of the thyroid confirmed an enlarged left lobe of the thyroid gland, which displaced the trachea to the right with a dominant nodule measuring 3x2.5 cm. Following the protocol, a fine needle aspiration biopsy (FNAB) was performed, yielding a cytological result: Bethesda V. The patient's medical history included depression and chronic constipation, and she was on antidepressant therapy.

After complete preoperative preparation, the patient was admitted to the general surgery department. The surgery, which proceeded without complications, was performed in May 2024. Intraoperatively, a nodule approximately 3 cm in size in the left thyroid lobe was verified, compressing and displacing the trachea to the right. This lesion did not infiltrate the thyroid capsule, and no regional lymphadenopathy was detected. A total thyroidectomy was performed with verification and preservation of both recurrent laryngeal nerves and all four parathyroid glands. Two drains were placed in the thyroid bed. In the early postoperative period, the patient developed significant hoarseness, but there were no respiratory issues. On the first postoperative day, when oral intake was resumed, the patient exhibited severe choking when swallowing food and liquids. Oral intake was immediately discontinued, and an ENT specialist was consulted. After fiber-laryngomicroscopy, both halves of the larynx were found to be immobile, with the vocal cords slightly bowed. The respiratory passage between the posterior parts of the vocal cords was passable for the diameter of the fiber endoscope (3–4 mm). A test with the endoscope tip confirmed the absence of reflex mechanisms for glottis closure. Saliva was observed spilling into the trachea at the level of the glottis. Due to complete loss of sensitivity in the supraglottis and bilateral immobility of the larynx, a nutritional gastrostomy or placement of a nasogastric tube with tracheostomy was suggested as a prevention for aspiration of food and liquids.

During further hospitalization, the patient remained in good overall condition, was respiratory sufficient at rest and with effort, and the wound healed per primam. The drains were removed, and conservative therapy was regularly administered. Laboratory analyses were consistently satisfactory, and the lung examination was

normal, as confirmed by an X-ray of the lungs. An endocrinologist was consulted and substitution therapy was introduced, along with a psychiatrist for the worsening of the patient's depression. On follow-up, an ENT examination showed both vocal cords immobile, with a respiratory space of 4-5 mm between the posterior parts of the vocal cords. A sensitivity test of the supraglottic region of the larynx elicited a reflex. A forced cough showed slight bilateral mobility of the arytenoids, and saliva continued to spill into the trachea at the level of the glottis. The patient underwent conservative treatment, including swallowing exercises, which resulted in clinical improvement in swallowing function. The patient was transitioned to full oral intake, with adequate swallowing of solid food. There was still occasional choking when drinking liquids, but the patient remained respiratory stable.

Despite adequate oral intake and clinical improvement in swallowing function, available diagnostic methods indicated no significant recovery of nerve function. Due to continued risk of aspiration and subsequent complications, the decision was made to perform a tracheostomy. The patient was informed of the indication for tracheostomy in the course of treatment, but after consultation with her family, she explicitly refused the procedure. Three weeks after the surgical treatment, she was discharged for further home care. At discharge, the patient was hemodynamically and respiratory stable, with satisfactory oral intake and no respiratory complaints. On regular follow-ups, the patient reported adequate oral intake while practicing swallowing exercises. Subsequent fiber-laryngomicroscopies indicated gradual recovery of function. By late July 2024, full recovery of speech and swallowing function was achieved.

Discussion

Numerous risk factors for the development of postoperative paresis/paralysis of the laryngeal nerves have been identified, including age over 65 years, previous surgeries in the neck region, malignant lesions, large goiters, ASA status, coagulation factor disturbances, and elevated nitrogenous substances (creatinine greater than 120 for men and 110 for women). (1, 5)

Temporary changes in voice quality after total thyroidectomy occur in 38% to 87% of patients, while permanent changes are described in 13% to 35% of cases. (6, 7) Transient swallowing difficulties occur in about 80% of cases, and persist in approximately 20% of patients. The most serious problems arise due to damage to the RLN. Temporary RLN damage occurs in 1.4% to 38.4% of cases, while permanent damage ranges from 0% to 18.6%. (8, 9, 10, 11) Due to the difficulty in clinically recognizing injury to the superior laryngeal nerve (SLN), the incidence range is between 14% and 20%. (3,4) Although direct nerve injury during surgery is rare, it is the greatest fear of every endocrine surgeon. The most frequent causes of these complications are related to the surgical procedure itself and include indirect nerve

damage due to ischemia, compression, and swelling caused by manipulation in the surgical field. Additionally, paresis can result from decompression of a nerve previously compressed by a large goiter, a hematoma that developed in the thyroid bed, or more rarely, vocal cord injury during endotracheal intubation. However, there have been cases in the literature where postoperative symptoms of laryngeal nerve paresis have occurred, despite the absence of the aforementioned causes. (12)

Symptoms of laryngeal nerve paresis manifest in various forms, ranging from mild hoarseness, changes in voice quality, to severe dysphonia, stridor, choking, and dysphagia. In the most severe cases, vocal cord paralysis is confirmed, with the cords remaining in a medial position, resulting in inadequate respiratory space and necessitating immediate tracheostomy. Dysphagic symptoms prevent adequate oral intake and if there is incomplete closure of the epiglottis, aspiration pneumonia can result from food and saliva entering the tracheobronchial tree. (13)

Postoperative diagnostic modalities include fiberoptic pharyngolaryngomicroscopy, indirect laryngoscopy, videolaryngostroboscopy (VLS), EMNG evaluation, as well as patient-reported symptoms. In most studies, the diagnosis of laryngeal nerve impairment is made based solely on laryngoscopically verified vocal cord paralysis through indirect laryngoscopy. (5, 14, 15) Videolaryngostroboscopy (VLS) is used for detailed observation of small changes in vocal cord mobility and analysis of the physiological and pathological characteristics of glottal vibration. It is also possible to observe the morphology and appearance of the vocal cords: color, volume, vascularization, integrity, and the presence of lesions. Symmetry, periodicity, glottal closure, width, and progression of the mucosal wave can be analyzed. (3, 4)

The treatment of patients with impaired breathing, speech, and swallowing functions requires a multidisciplinary and individualized approach. Intensive conservative treatment includes short-term use of corticosteroids to reduce edema and inflammation, with continuous monitoring of vital parameters, such as oxygen saturation, heart rate, and blood pressure. For patients with significantly impaired swallowing, oral intake is temporarily suspended, and enteral nutrition is provided via nasogastric tube or gastrostomy to ensure adequate caloric and nutritional intake. In patients with severe respiratory difficulties, such as stridor or significant upper airway insufficiency, invasive surgical procedures, such as tracheostomy, are necessary to ensure adequate ventilation. Simultaneously, the implementation of phoniatric exercises plays a crucial role in voice rehabilitation, reducing dysphagia, and improving the

quality of life for patients. Intraoperative neuromonitoring (IONM), as a modern method for protecting laryngeal nerves during surgery, significantly reduces the incidence of postoperative speech and swallowing disorders. However, its use is still not standard in most healthcare centers, primarily due to technical and financial limitations. The implementation of this method in daily practice could contribute to improved outcomes and reduced complications. (16, 17) During the recovery period, a multidisciplinary approach is essential, involving healthcare professionals from various specialties, such as anesthesiologists, ENT specialists, surgeons, phoniatrists, and nutritionists. This collaboration ensures optimal patient care and allows for the adjustment of treatment protocols based on the severity of symptoms, functional capacity, and overall health status. In addition to medical interventions, special attention is given to psychological support for patients, as breathing, speech, and swallowing disorders can significantly affect emotional well-being and quality of life. Educating patients and their families about the importance of rehabilitation and exercises, as well as regular follow-up visits, is key to the long-term success of treatment. (18, 19, 20)

Conclusion

Considering that the most severe complications affect the patient's vital functions and demand prompt diagnosis and immediate treatment, it is crucial that such surgical procedures be performed in institutions equipped to provide a multidisciplinary approach, with the involvement of specialists from various medical fields.

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