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Case Report / Приказ случаја

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Thrombophlebitis of the internal jugular vein after tonsillectomy

Тромбофлебитис унутрашње југуларне вене после тонзилектомије

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SUMMARY

Introduction Thrombophlebitis of the internal jugular vein may appear as a rare complication of oropharyngeal infection and tonsillectomy procedure. Clinical features usually include acute onset of inflammation with formation of venous thrombosis and secondary septic propagation (Lemierre's syndrome).

The aim of this work was to present a rare case of internal jugular vein thrombophlebitis as a late complication following tonsillectomy.

Case Outline: We present an otherwise healthy 25-year-old male patient which was performed tonsillectomy due to chronic tonsillitis. Two weeks after surgery, the patient was rehospitalized for high temperature, diffuse swelling on the left side of the neck, fatigue, painful swallowing and constrained mouth opening. Thrombophlebitis of the left internal jugular vein was diagnosed by the neck ultrasound. Complete recovery was achieved in three weeks time by the combination of antibiotics and anticoagulant/antithrombotic therapy.

Conclusion: Tonsillectomy is a risk factor for the internal jugular vein thrombosis in adults with chronic tonsillitis especially if fibrous adhesions are expected or found during the surgical procedure.

Keywords: Lemierre's syndrome; tonsillectomy, complication; venous thrombosis, ethiology, diagnosis, therapy

САЖЕТАК

Увод Тромбофлебитис унутрашње југуларне вене може настати као ретка компликација орофарингеалне инфекције и тонзилектомије. Клиничке одлике обично укључују акутну појаву инфламације са настанком венске тромбозе и секундарном септичном пропагацијом (Лемиеров синдром).

Циљ овог рада је био да прикажемо редак случај тромбофлебитиса унутрашње југуларне вене после тонзилектомије.

Приказ болесника Приказујемо иначе здравог 25-годишњег мушкарца код којег је урађена тонзилектомија због хроничног тонзилитиса. Две недеље после операције поново је хоспитализован због високе температуре, дифузног отока леве стране врата, малаксалости, болног гутања и ограниченог отварања уста. Тромбофлебитис леве унутрашње југуларне вене дијагностикован је ултразвучним прегледом. Потпуни опоравак је постигнут за три недеље комбинацијом антибиотика и антикоагулантне/антитромботичне терапије.

Закључак Тонзилектомија је фактор ризика за настанак тромбофлебитиса унутрашње југуларне вене код одраслих са хроничним тонзилитисом, нарочито ако се очекује или се током операције утврди постојање фиброзних адхезија.

Кључне речи: Лемиереов синдром; компликација тонзилектомије; венска тромбоза, етиологија, дијагноза, лечење

INTRODUCTION

Thrombophlebitis of the internal jugular vein with septicemia accompanied by the presence of secondary abscesses refers to a rare complication of oropharyngeal infection mostly due to tonsillopharyngitis complicated by peritonsillar abscess. Only sporadically it is a representation of a post-tonsillectomy outcome, predominantly in adults. Similar clinical picture may also develop secondary to mastoiditis, otitis, sinusitis and odontogenic infection as well as appendicitis, urinary infection and suppurative endometritis after delivery [1, 2, 3]. Because of the common clinical aspects, these septicemias with thrombus formation were grouped together by André Lemierre in 1936. and later on, they were named after him [1].

Lemierre's syndrome was a common complication of oropharyngeal infections before the discovery of antibiotics [4]. Although increasing number of the cases has been noticed by some authors since 1990., the incidence rate of 14.4 cases per million indicated a rare condition [5].

Lemierre`s syndrome occurs mostly in the young adult population at the end of winter or in early spring [6, 7, 8]. An equal gender distribution is reported by most authors while the higher prevalence of males is seldom found [7].

The main causative agents of tonsillitis and peritonsillar abscesses are Streptococcus pyogenes, anaerobic Gram-positive coccus, and Fusobacterium necrophorum, a non-spore-forming obligate anaerobic Gram-negative, which belong to the physiological flora of the oropharynx. The latter one is also the most responsible for Lemierre's syndrome.

Clinical manifestations vary depending on the organs affected by the infection [9]. Fever and gastrointestinal discomforts are found in 82% of all cases [1]. Thromboembolic systemic complications may appear as bacteremia, septicemia, pneumonia, pericarditis, hepatosplenomegaly, meningitis, arthritis, kidney, and brain abscesses. Pulmonary septic thrombosis is the most common complication occurring in 95% of cases [10, 11]. Before the discovery of antibiotics, the mortality rate was over 90%, mostly due to the anaerobe postanginal septicemia [1, 4]. Today Lemierre`s syndrome may have incomplete clinical forms because of better diagnosis and treatment, but yet it is a serious and potentially lethal condition. Nowadays, mortality rate fluctuates between 4% and 22% [6, 7, 12].

Benzylpenicillin, the third-generation cephalosporins, carbapenems (imipenem, meropenem), clindamycin, chloramphenicol, and metronidazole in vitro performed a high anti-microbial effect against obligate anaerobic bacteria [13, 14]. Administration of penicillin as a monotherapy is not recommended, due to the ability of some strains of Fusobacteria to create beta-lactamase in 22.7% of the cases [15, 16, 17, 18]. Metronidazole is generally considered as a drug of choice for this type of infection. The weak resistance of anaerobes to this antibiotic, good resorption and bioavailability of the drug enable simple oral administration, and a rapid therapeutic effect [6, 15, 19, 20]. Antibiotic therapy in Lemierre`s syndrome is required within the range of 3-6 weeks, while intravenous administration of antibiotics may be replaced by per os one when a patient becomes afebrile [6, 13, 19]. Administration of antibiotics in the period of six weeks represents the optimal period for curing due to difficult penetration of the drug in the clot. Period of curing shorter than two weeks may lead to the relapse [6]. The benefits and risks of anticoagulation therapy in Lemierre's syndrome still have to be clarified [6].

Surgical treatment of thrombophlebitis of the internal jugular vein is needed in patients with a risk of septic thrombosis and embolic complications [20, 21, 22]. Suppurative abscesses in the parts of neck, lungs, liver, joints, and muscles have to be drainage [20, 21, 22]. Hyperbaric oxygen therapy as an addition to the surgical treatment may have beneficial results [23].

The aim of this work was to present a rare case of internal jugular vein thrombophlebitis as a late complication following tonsillectomy.

CASE REPORT

Tonsillectomy was indicated to a 25-year-old male patient, due to the anamnesis and clinically demonstrated chronic tonsillitis with frequent exacerbations. Otherwise, the patient was mostly healthy with no risk factors for thrombosis and other presumed intraoperative or postoperative complications. Preoperative microbiological examination of oropharyngeal and nasal secretion

demonstrated physiological bacterial microflora with no evidence of Candida albicans, while the routine hematological and biochemical analysis were within reference ranges.

At the time of hospital admission, moderately hypertrophic palatine tonsils with detritus within the crypts were present on clinical examination without symptoms and signs of exacerbated infection. Tonsillectomy was performed under general endotracheal anesthesia using (Ultracision Harmonic SNGHK scalpel) (ETHICON ENDO-SYRGERU, LLC Guaynabo USA) dissection in 30 minutes time. Fibrous adhesions of the tonsillar capsule were dissected with minimal bleeding and with no injury to the tonsillar bed. The postoperative period during hospitalization was uneventful, the patient was physically active and there was no need for antibiotic administration. On the fourth postoperative day, according to our hospital policy, the patient was discharged from the hospital with normal local postoperative findings and in a good general health status.

Due to acute onset of subjective sensation of pressure and blunt pain during swallowing following with appearance of swelling on the left side of the neck, the patient contacted a practicing physician on the 4th postoperative day and was prescribed peroral antibiotic therapy (amoxicillin-clavulanate 625 mg three times daily). In spite of treatment, the intensity of symptoms and signs persisted in the following days.

Patient under the therapy came over to the hospital again on the 14th postoperative day and was immediately rehospitalized. On readmission, the patient reported painful swallowing, constrained mouth opening, fatigue, and nausea. Body temperature was elevated (38.5°C). Local examination of each tonsillar fossa demonstrated wound healing process in the stage of epithelization without hemorrhage and inflammation. Palpatory sensitive, diffuse swelling of 4x5 cm was found on the left side of submandibular region (Figure 1). Both a parapharyngeal abscess and submandibular abscess were under suspicion. Hematological and biochemical blood analysis showed high erythrocyte sedimentation rate (ESR 86.0 mm/1h), leucocytosis at white blood cell count (WBC 13.3 x109/L), increased level of a high-sensitivity C-reactive protein test (hs-CRP 102.2 mg/L), moderately increased procalcitonin level (PCT 0.47 10^12/L), reactive thrombocytosis at platelet count (PLT 508.0 10^9/L) and elevated D-dimer values (FDP 1,58 mg/L). Ultrasound imaging of the neck demonstrated thrombophlebitis of the left internal jugular vein together with inflammation, edema and reactive lymphadenitis in the surrounding soft tissue of the neck upper third part. The internal jugular vein to the base of the neck was incompressible, thickened walls without the presence of a CD signal, with the swelling of perivascular structures (Figure 2). Surgical area was swabbed but microbiological findings were

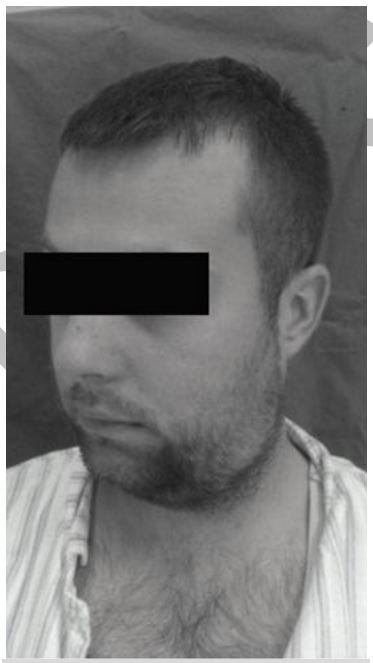

Figure 1. Swelling of the left neck side.

negative. Both intraoral examination and panoramic x-ray radiography imaging excluded odontogenic infection as a causative agent. Detailed clinical examination, chest x-ray, abdominal ultrasound imaging and CT imaging of endocranium confirmed no existence of thromboembolism of the lungs, abdomen, joints and central nervous system.

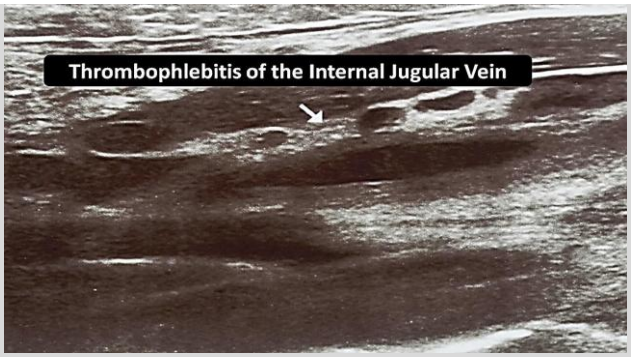

Figure 2. Ultrasound imaging thrombophlebitis of the left internal jugular vein.

Based on those findings, we established the diagnosis of the internal jugular vein thrombophlebitis with parapharyngeal soft tissue inflammation on the left side of the neck in association with general infectious symptoms and signs but without further propagation of septic thrombi.

Antibiotic therapy was empirically administered on the day of patient's readmission: intravenously ceftriaxone 2 gr two times daily and metronidazole 500 mg three times daily during seven days period. In spite of contradictoriness related to the therapeutic justifiability of anticoagulant treatment in Lemierre's syndrome, and the body weight of the patient is 70kg, we opted for its administration: nadroparin subcutaneous injection 0.3 ml two times a daily ten days.

The patient responded well to the therapy. On the third day of therapy, laboratory findings important for infection and blood clots showed declining values: ESR 68.0 mm/1h, WBC 6.0 109/L, hs-CRP 51.9 mg/L, PCT 0.318 10^{12}/L, PLT 482.0 10^{9}/L.

After seven days of therapy, neck swelling retreated and the patient became afebrile (Figure 3). Improved local and general state enabled switching intravenous antibiotic therapy to peroral one: cephalexin 1000 mg two times daily for two weeks and metronidazole 400 mg three times daily for five days.

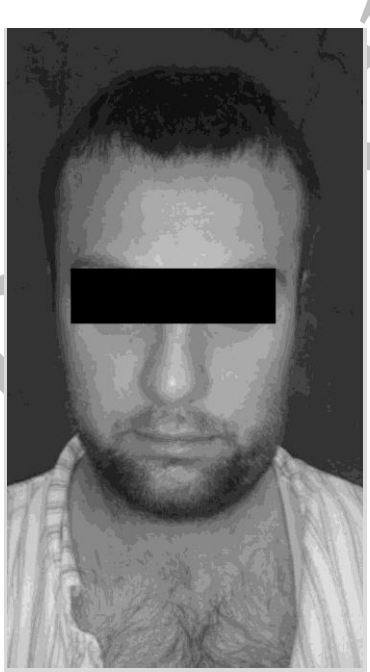

Figure 3. Regression of the left neck swelling after seven days of therapy

Anticoagulant treatment was replaced with antithrombotic medication: acetylsalicylic acid 100 mg once daily peroral in five weeks duration.

After three weeks of antibiotic therapy, painful sensation and swelling in the neck region were not observed. Laboratory findings amounted for ESR 10.6 mm/1h, C-reactive protein (hs–CRP) 1.64 mg/L, D-dimer (FDP) 0,25 mg/L, WBC 7.8 109/L, and for PLT 298.0 10^9/L. At the control examination five weeks after antithrombotic therapy completion, ultrasound imaging confirmed physiological findings of the internal jugular vein lumen without noticeable signs of thrombosis, parapharyngeal inflammation or reactive lymphadenitis (Figure 4).

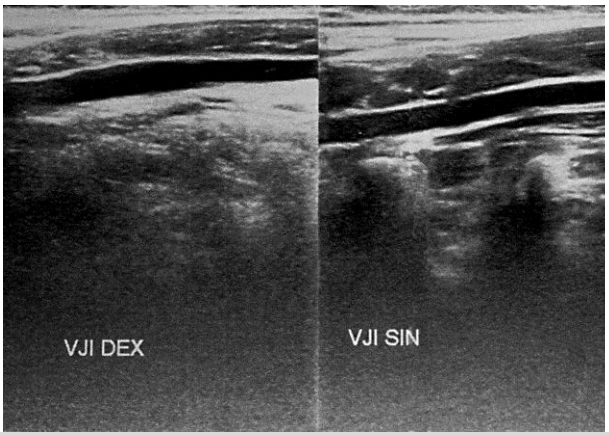

Figure 4. Control ultrasound imaging of the internal jugular veins six weeks after therapy completion.

DISCUSSION

Thrombophlebitis of the internal jugular vein as a post-tonsillectomy complication represents a case with very rare occurrence [24]. Lemierre syndrome in a form of septic arthritis after tonsillectomy is also reported [4]. Tonsillectomy complications mostly occur in a form of hemorrhage and bacterial infections, which may result in a fatal outcome, classifying tonsillectomy as a potentially serious surgical procedure, especially in adults. Bacterial infections predominantly manifest on the second, fourth, even on the tenth postoperative day causing septic metastasis [24].

In the present case, the symptoms and signs of complication suddenly appeared on the 4th day after tonsillectomy, while a diagnosis of septic thrombophlebitis without secondary septic metastasis was established on the 14th postoperative day in the patient who already was under peroral antibiotic therapy.

Thrombophlebitis occurs from the spread of inflammation from the surrounding structures to the wall veins, while the phlebothrombosis is characterized by non-specific inflammatory reaction with the formation of thrombus fixed to the internal wall of the vein, in order to ultimately develop a fibrous organization. Thrombophlebitis most commonly occurs in the superficial veins and the phlebothrombosis in deep veins.

Thromboses of the upper limp and neck are rare in comparison with those of the lower extremities. Internal jugular vein thrombosis is a serious event with a potentially fatal outcome. Complications include pulmonary embolism, sepsis with septic emboli to different organs and tissues as well as intracranial propagation of the thrombus with cerebral edema. As any thrombosis, internal jugular vein thrombosis is precipitated by Virchow's triad: endothelial damage, alteration of blood flow and hypercoagulability. The history and examination of patients with internal jugular vein thrombosis may be vague and misleading. Patients may present with a painful swelling of the neck but they may be absolutely asymptomatic [25].

Interestingly, there were no signs of infection at the local clinical examination of the surgical region, pharyngeal space, and oral cavity. The wound healing process locally appeared quite normal all the time. On the contrary, the patient's febrile status, painful swallowing and the neck soft tissues unilateral swelling and tenderness with regional lymphadenitis, raised a strong suspicion of postoperative infection, mainly contributing to bacterial causes. Additionally, thrombus of the left internal jugular vein was diagnosed by the ultrasound neck imaging. Values of sedimentation, leucocytes, C-reactive protein, procalcitonin, and D-dimer were diagnostically significant in favor of

either serious local bacterial infection or systemic one. Values of thrombocytes pointed to a reactive thrombocytosis, rather than to primary one. Those clinical and laboratory findings indicated a diagnosis of Lemierre's syndrome.

We consider that in this rare case of Lemierre's syndrome infective agent spread, either from chronically infected tonsillar crypts during tonsils dissection or from colonization of open surgical wound by oral cavity bacterial flora during the postoperative period. Infection propagated through the parapharyngeal space causing soft tissue inflammation and thrombophlebitis of the internal jugular vein. Besides, both tonsillectomy as a surgical procedure and postoperative infection may be risk factors for reactive thrombocytosis and blood hypercoagulability.

As mentioned above, microbiological findings of oropharyngeal mucus showed physiological flora preoperatively. Microbial agents were not isolated at the time of rehospitalization when samples were taken from the patient under therapy. We consider that a possible factor for negative microbiological finding was a course of beta-lactam with the beta-lactamase-inhibitor antibiotic combination, administered by a practicing physician. That therapy, in our opinion, provided a certain degree of coverage of the oral cavity common microbes but it was insufficient for adequate infection control. Besides, isolation of anaerobes is relatively long lasting and difficult and requires special conditions of samples cultivating.

In the present case, we have adhered to the widely spread conception providing that evidence for the beneficial use of antimicrobial prophylaxis in tonsillectomy in otherwise healthy patient were insufficient, opposite to other clean-contaminated head and neck procedures. Antibiotics also were not administered to the patient during the postoperative period in hospital, for it was uneventful and in association with normal preoperative microbiological findings.

To treat the complication and to prevent secondary septic thrombosis in our patient antibiotic and anticoagulant therapy was administered. Broad-spectrum antibiotic therapy was selected empirically to cover a wide range of aerobic and anaerobic Gram-positive and Gram-negative bacteria. Switching to the infection specific therapy was not done because of both negative microbiological culture and high efficacy of administered ceftriaxone with metronidazole combination. As far as anticoagulant therapy administration in patients with Lemierre`s syndrome is concerned, opinions are divided. Some authors suggest anticoagulant therapy in all the cases [26, 27]. Others consider anticoagulant therapy may be administered if thrombosis affects cerebral sinuses or if antibiotic therapy did not give satisfying results [5, 6, 19, 28, 29]. In our case, low-molecular-weight heparin was administered in preventive dose and after a 10^{th} days switched to antithrombotic medication having in mind a possibility of late post-tonsillectomy hemorrhage [30].

For low molecular heparin in a dose of 0.3 ml twice daily, we decided to avoid the possibility of complications after tonsillectomy in the form of secondary bleeding, which can be reported after seven days and two weeks. Tonsillectomy is made with an ultrasound scalpel, which in the area of the

operational region produce a greater wound surface in the form of burns and, therefore, prolongs the epithelial period compared to the standard operating technique.

Even if the microbiological finding was preoperatively negative, we consider that the venous jugular thrombophlebitis was internal postoperatively as a result of the spread of inflammation from the operative region and the soft tissue structures. In support of this, laboratory results, swelling in the neck area and a febrile condition of the patient.

In our case, in addition to antibiotic therapy, a preventive dose of nadroparin has been administered taking into account the past time from the tonsillectomy, body weight of the patient, and thrombophlebitis internal jugular vein as a complication still in the initial phase without systemic complications.

The preventive dose of nadroparin with 0.3ml is given instead of curative dose because of the risk of bleeding in the operative area. Period of epithelialization of surgical wound after tonsillectomy is known as potentially risky for postoperative bleeding. For the same reasons, anticoagulant therapy after 10^{th} days is replaced with low-dose of antithrombotic medication.

Aggravation of patient's general status and neck swelling following tonsillectomy, especially within young adult patients, should raise a suspicion of a complication developing in a form of Lemierre`s syndrome. Doctors should have high levels of cautiousness in that situation as it could imperil the life of a patient while adequate antibiotic and anticoagulant therapy may prevent metastatic septic thrombosis and lead to complete recovery.

Tonsillectomy is a risk factor for the internal jugular vein thrombosis in adults with chronic tonsillitis especially if fibrous adhesions are expected or found during the surgical procedure.

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