Case Report

Retropharyngeal abscess on patient with diabetes mellitus type-2, dental cavity, and oral candidiasis

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ABSTRACT

Background: Retropharyngeal abscesses are uncommon but potentially life-threatening diagnosis. Treatment of retropharyngeal abscess ranges from prolonged courses of intravenous antibiotics to surgical incision and drainage. **Purpose:** To disclose a case of retropharyngeal abscess, and to study the management. **Case report:** A 64-year-old male came to the emergency room complaining of pain when swallowing for one week. The pain became more severe and unabling him to eat solid food. Patient also had diabetes mellitus, dental cavity and oral candidiasis. **Clinical question:** In patients with retropharyngeal abscess, when does incision and drainage need to be performed? How is the recovery rate compared to conservative treatment? **Review method:** The literatures were searched on PubMed, Medline database as well and Google Scholar. The literatures obtained were then filtered according to the publications in the last 10 years. **Result:** Literature and studies of retropharyngeal abscess that were found commonly studies in children, but there were also studies in adults, more likely in a wider scope as deep cervical abscess. **Conclusion:** Incision and drainage are the therapy of choice for adult patient, while conservative antibiotic therapy, was the first option for pediatric retropharyngeal abscess.

Keywords: retropharyngeal abscess, deep cervical abscess, incision and drainage, conservative therapy

ABSTRAK

Latar belakang: *Abses retrofaring merupakan diagnosis yang jarang ditemui namun dapat menyebabkan kondisi yang mengancam jiwa. Penatalaksanaan pada abses retrofaring dapat bervariasi, dengan pemberian terapi antibiotik intravena hingga insisi drainase.* ***Tujuan:*** *Untuk melaporkan satu kasus abses retrofaring, dan mempelajari penatalaksanaan terapinya.* ***Laporan kasus:*** *Seorang laki-laki 64 tahun datang ke instalasi gawat darurat dengan keluhan nyeri saat menelan, selama satu minggu. Nyeri bertambah berat, dan tidak bisa menelan makanan padat. Pasien memiliki riwayat diabetes mellitus, karies gigi, dan candidiasis.* ***Pertanyaan klinis:*** *Bagaimana panduan terapi pada kasus abses retrofaring, serta kapan insisi drainase perlu dilakukan? Bagaimana angka kesembuhan dibandingkan terapi konservatif?* ***Telaah literatur:*** *Literatur diperoleh dari* PubMed, Medline *dan* Google Scholar, *kemudian literatur disaring menurut publikasi 10 tahun terakhir.* ***Hasil:*** *Literatur dan penelitian mengenai abses retrofaring yang ditemukan umumnya diteliti pada populasi anak-anak, namun ada juga penelitian pada orang dewasa yang didapatkan dalam lingkup yang lebih luas sebagai kasus abses leher dalam.* ***Kesimpulan:*** *Insisi dan drainase pada pasien dewasa merupakan pilihan utama terapi dalam lingkup yang lebih luas yaitu abses leher dalam, sedangkan terapi antibiotik konservatif pada abses retrofaring anak masih menjadi pilihan utama.*

Kata kunci: *abses retrofaring, abses leher dalam, insisi drainase, terapi konservatif*

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INTRODUCTION

Retropharyngeal abscess is pus collected in the retropharyngeal space, located between the buccopharyngeal fascia anteriorly and the alar fascia posteriorly. Retropharyngeal abscesses are uncommon but potentially life-threatening diagnoses.[1] Retropharyngeal abscess is one kind of deep neck infections. Deep neck infections itself are the presence of inflammation with or without pus in the deep spaces and fascia of the head and neck. It can be categorized into parapharyngeal, infratemporal, pterygomaxillary, temporal, parotid, masticator, submandibular, visceral, carotid sheath, peritonsillar-pharyngeal mucosal, retropharyngeal, and danger space.[2]

Deep neck infections symptoms include fever, sore throat, neck swelling, neck pain, torticollis, drooling, trismus and stridor.[3] Retropharyngeal abscess can lead into acute airway compression, aspiration, mediastinitis, pericarditis, sepsis, neurological defect, pneumonia, necrotizing fasciitis, disseminated intravascular coagulation, empyema and jugular vein thrombosis.[4-6] Retropharyngeal abscess itself is more commonly found in children rather than in adults.[6] The pathophysiology is, in children under the age of five or younger, still had a lot of chains of lymph node on the retropharyngeal space, and the infection of upper airway such from nose, sinuses, and pharynx can cause a suppurative adenitis of these retropharyngeal lymph nodes, and result in the formation of abscess in the retropharyngeal space. Adult cases were rarely found because the lymph nodes are atrophy or regressed, and it reduced the case of suppurative adenitis that can lead to abscess formation on retropharyngeal space.[1,6]

Retropharyngeal abscesses are rare in adults, and if was found on adult, it commonly occurs in immunocompromised patients as well as older one with systemic diseases like diabetes mellitus.[2] Treatment of retropharyngeal abscess ranges from carefully monitored intravenous antibiotics to surgical incision and drainage.[1] It had been debated as to whether a retropharyngeal abscess needed an urgent incision and drainage,[7] or to a well monitored of 48 hours of intravenous antibiotic, with or without corticosteroid.[3]

The purpose of this report was to study the management of retropharyngeal abscess, whether or when does incision and drainage is needed to be done in patient with retropharyngeal abscess, and when should we choose conservative therapy as the treatment of retropharyngeal abscess.

CASE REPORT

A 64 years old male came to emergency room complaining of pain when swallowing for one week. The pain became more severe on the last three days and was and unable to swallow solid food. Priorly, the patient had already been examined and undergoing treatment from public health center (PHC), and also went to a dentist. At PHC, the patient had blood test and showed a high blood glucose. On cross examination, the patient said that he had history of high blood glucose, and taken oral anti diabetic drug continuously, and had a history of cardiovascular disease. The patient also went to a dentist two days previously, and was diagnosed as oral candidiasis and dental cavity. The patient was given therapy of ketoconazole 200 mg twice daily.

In the emergency room, recorded blood pressure was 142/125 mmHg, pulse rate was 129 beats per minutes, respiration rate on 22 beats per minutes, and body temperature 36°C. On clinical examination he had a little drooling of saliva, and often tried to emit sputum. The patient was uncomfortable in supine position, and more comfortable when sitting. There was a pain in palpation felt from the right lateral neck to the anterior part of the neck. There was no neck swelling, and no trismus. Oropharyngeal examination revealed erythematous and bulged posterior

pharyngeal wall. Oral hygiene was deficient, the tongue had a white plaque, and there was a dental cavity on lower left molar 3 (M3) (Figure 1).

Figure 1. White plaque tongue and erythematous bulged posterior pharyngeal wall

Blood test showed total white blood cell count of 17.5 thousand/mm^3, hemoglobin level of 17.5 dl, blood sugar level of 381 mg/dl. Cervical x-ray revealed soft tissue swelling on both submandibles as high as 3-6^{th} cervical vertebra, unclear soft tissue pneumaticity, and paracervical muscle spasm (Figure 2). Culture examination was not carried out due to limited facilities.

Figure 2. Soft tissue swelling on both submandible as high as 3-6th cervical vertebra

The diagnosis of retropharyngeal abscess was made, and patient was started on intravenous (IV) Meropenem 1 gr tds, Metronidazole 500 mg tds, Methylprednisolone 62.5 mg bd, and Metamizole 500 mg tds. Blood glucose was 381 mg/dl on admission. The patient was also treated by the internist because the history of diabetes mellitus. He was given subcutaneous (SC) Insulin Glargine 30 unit od at night, Insulin Aspart 16 units (SC) tds, and addition of Insulin Aspart 20 units (SC) along with each administration of Methylprednisolone injection.

Patient was observed in ward, and felt decreased in pain, and more easier to swallow soft foods. After two days, the pharyngeal wall bulge subsided, white plaque on the tongue was decreased, and no deviation on the uvula (Figure 3). He was discharged on the fourth day, with Cefixime 200 mg bd, Metronidazole 500 mg tds, Methylpredisolone 4 mg bds, Insulin Glargine 10 units od at night, and Insulin Aspart 10 units tds.

Figure 3. Pharyngeal wall bulge subsided

CLINICAL QUESTION

In patients with retropharyngeal abscess, when does incision and drainage need to be performed, how is the recovery rate compared to conservative treatment?
P : Patient with retropharyngeal abscess
I : Incision and drainage
C : Conservative therapy
O : Recovery rate

METHOD

A literature search was conducted with the keywords “retropharyngeal abscess”, “deep cervical abscess”, “management”, “incision and drainage” and “conservative treatment”. The information was obtained on PubMed, Medline database, and Google

Scholar. Obtained literature were filtered according to the publications in the last 10 years, relevant to the topic, and available in full text.

The inclusion criteria were: 1) The article published in the last 10 years; 2) Retropharyngeal abscess in adult and pediatric patient; 3) Deep cervical abscess in adult and pediatric patient; 4) Treatment of retropharyngeal abscess in adult and pediatric patient managed by conservative with antibiotic, or undergone surgery/incision drainage, guided by ultrasonography (USG). The exclusion criteria were: 1) The article was not available in full text; 2) The article was published more than 10 years ago.

RESULT

From fourteen literatures that we found, only three literatures that related to our topic, but none reviewing the retropharyngeal abscess that happened only on adult patient.

DISCUSSION

Retropharyngeal abscess is a deep tissue neck infection which can be life threatening. Retropharyngeal abscess occurs mainly during infancy or childhood, and rarely found in adult patient.[1,7] In children, retropharyngeal abscess frequently associated with viral upper respiratory infections, pharyngitis, and otitis media. These infections cause adenopathy of the retropharyngeal lymph nodes and suppuration, which precipitate retropharyngeal abscess formation.[1]

There was a different mechanism of deep cervical abscess in adult and children. It is thought that deep neck infection or abscess in adult or older children is caused by direct introduction of infective materials from trauma, or direct extension of infection from the adjacent structures, such as trauma to the posterior pharynx, intraoral procedures, hypopharyngeal foreign body, or odontogenic infection; while in small children was caused typically by the suppurative changes in lymph node caused by the infection in sinuses, nose, adenoid, tonsils, and also middle ear, which mostly spread to the neck lymphatic system.[1,7] The retropharyngeal space contains chains of lymph nodes that drain the nasopharynx, adenoids, posterior paranasal sinuses and middle ear. These lymph nodes are present in young children, but atrophy and involuted by the age of four to five.[1]

The incidence of deep cervical abscess is increasing in patient with systemic disease and older patient; it could be caused by the decreasing of defence mechanism, slower recovery rates and increasing risk of complication.[5] Risk factor for retropharyngeal infection include poor oral hygiene, diabetes mellitus, immunocompromised, and low socioeconomic status.[1] Our patient had retropharyngeal abscess with no history of trauma. Patient also had risk factor for developing retropharyngeal abscess such as, poor oral hygiene indicated by oral candidiasis, diabetes mellitus, and immunocompromised status as an elderly person. Patient also went to the dentist two days previously, complaining of pain on the left lower gum, and dental cavity.

There are three ways of retropharyngeal abscess forming. First, penetrating trauma to head or neck, that can result in the entry of pathogen into the body and leads to abscess forming. Second, infection of adjacent structures such as teeth that can spread directly to the retropharyngeal space. Third, drainage of lymph from affected areas such as nose, paranasal sinuses, nasopharynx, oropharynx, middle ear, and surrounding structures.[4] In our patient, the infection might develop by the spreading pathogen from dental cavity or infection of the adjacent structure, and the condition was exacerbated by the presence of diabetes mellitus, and elderly.

Patients present with a diagnosis of retropharyngeal abscess require hospitalization, intravenous antibiotic therapy, and supervision by an otorhinolaryngologist. Antibiotic therapy should cover upper respiratory organisms. The organisms found in retropharyngeal abscesses are often polymicrobial infections. Bacteria that commonly contribute to these infections include Group A *Streptococcus pyogenes, Staphylococcus aureus, Fusobacterium, Haemophilus* species and other respiratory anaerobic organism.[1] Another resource found that common organism which responsible for causing retropharyngeal abscess or a wider scope, a deep neck abscesses are *Staphylococcus aureus, S. viridans, beta-haemolytic Streptococcus, Klebsiella pneumonia, Bacteroides, and Peptostreptococcus.*[6]

Retropharyngeal abscess was one kind of deep cervical abscess, besides peritonsillar, masseteric, pteropalatine, maxillary, parapharyngeal, submandibular, parotid, and floor of mouth abscesses. Deep cervical abscess microbiology itself characterized by polymicrobial infections, including aerobic and anaerobic, and the most common found are gram positive.[5]

According to Thiago et al.[5], many studies had shown that patients with diabetes mellitus were more susceptible to deep cervical infection. Uncontrolled diabetes mellitus, which is hyperglycemia may impair several mechanisms of humoral host defense. It caused varied in neutrophil function such as adhesion, chemotaxis, phagocytosis, and result in predisposition to infection and complication. As seen in our patient, he had a history of diabetes mellitus with dental cavity as the source of infection. Hirasawa et al.[8] stated that preventing the aggravation of abscess by strictly controlling the acute phase of glycemia ≤250mg/dl is necessary.

Patient that presents with compromised airway should have surgical incision and drainage immediately to relieve the upper airway obstruction.[9,10] If there is no severe respiratory distress or airway obstruction, the management begins with a 24 to 48 hours of intravenous antibiotic therapy. The airway of patient must be monitored, especially during the first 24-48 hours of therapy, to determine the need for surgical incision and drainage.[4]

Initial antibiotic should include Ampicillin sulbactam (50 mg/kg every 6 hours) or Clindamycin (15 mg/kg every 8 hours). If patients appear septic or not respond to initial antibiotic therapy, Vancomycin or Linezolid also should be administered.[11] Recommended antibiotic for retropharyngeal abscess are Ampicillin/ Sulbactam, Clindamycin, third generation of Cephalosporin, and Metronidazole. Intravenous steroid is also given to decrease the edema or inflammation on soft tissue, and decrease pain.[1]

Our patient was given the trial intravenous antibiotic therapy, in the form of Meropenem 1 gr tds, along with Metronidazole 500 mg tds, Methylprednisolone 62,5 mg bd, and Metamizole 500 mg tds. He had a good improvement on the second day on ward. The patient felt decrease in pain, and more easier to swallow food. So, there was no surgical intervention need to be done on our patient. No antibiotic culture examination was performed because the lack of facilities, so we could not conclude the organism that infected our patient, and we could not do the antibiotic sensitivity test.

Meropenem is a beta lactamase-resistant antibiotic, such as Cefoxitin, Cefuroxime, and Imipenem. Given with a combination of anaerob antibiotic such as Metronidazole or Clindamycin, would usually be the empirical antibiotic of choice. Penicillin with a combination of beta lactamase inhibitor such as Clavulanic acid and Ampicillin-sulbactam would also be a preferable choice of antibiotic in retropharyngeal abscess.[5,11]

According to Yanti LA[12] study, the highest sensitivity antibiotic in deep cervical abscess were Ciprofloxacin, Meropenem and Tigecycline. While based on Syaiful Rijal et al.[13] study, the highest sensitivity rate of antibiotic in deep cervical abscess were Meropenem (73.8%), Cefoperazone-sulbactam (69.37%), and Oxacilin (66.67%). Based on Beka et al.[2] study in Greece, and according to their epidemiology, they proposed an empiric therapy of intravenous beta-lactam or beta-lactamase inhibitor, and the using of Metronidazole or Clindamycin was added only in specific cases such as in immunocompromised patient.

Our patient had a good improvement on conservative treatment with antibiotic and corticosteroid intravenous observed in 24-48 hours, no surgery was needed in our patient. Blood glucose was also managed by the internist since the patient also had diabetes mellitus and received corticosteroid that could increase the blood glucose level. According to Cramer et al.[7], delay in surgical drainage of deep neck abscess was associated with an increase in mortality and morbidity in adult, but there was no association found between timing of drainage with the mortality and morbidity in children. Based on Cramer,[7] we could not conclude that adult retropharyngeal abscess needed an urgent surgical drainage, since the article did not provide the study about the location of deep neck abscess itself.

Some of the studies mentioned that abscess greater than 25 mm needed a surgical intervention. Wong et al.[14] on their study concluded that a trial of high dose intravenous antibiotic in stable children with close observation could be the primary line of treatment, especially in small deep abscess less than 25 mm. On other study by Villanueva et al.[3], an intravenous antibiotic and corticosteroid for 48-72 hours resulted in a great improvement on the symptoms in less than 24 hours. Even the abscess was more than 25mm, the study showed a resolved abscess and earlier improvement by antibiotic and corticosteroid therapy. But still, there is a controversy of steroid due to their immunosuppressive effects.

Incision and drainage in adult patient with deep cervical abscess are believed to prevent morbidity and mortality associated with abscesses. Deep neck abscesses that occur in adults are caused by an infection mechanism that occurs in the cervical fascia plane, and can spread vertically, while infections that happen in children more often occur in the lymphatic node and do not spread unless treatment is delayed and cause rupture of the gland.[7] Because of this mechanism, mediastinal spread is rare in children, but if suspected or confirmed, should be an indication for prompt surgical drainage.[14]

Drooling as happened in our patient, was specific to the retropharyngeal abscess, it indicates severe compression or oedema of the oesphagus. Other symptom that needs an urgent surgical drainage was hoarsenes. This suggests an oedema of the larynx with the possibility of acute airway obstruction.[4]

The retropharyngeal abscess that occurred in our patient resulted from several risk factors that the patient had, such elderly and diabetic mellitus. The source of infection itself most likely caused by infection on dental cavity that spread into the retropharyngeal space. The management of retropharyngeal abscess in our patient was done conservatively by careful monitored of intravenous antibiotic and corticosteroid. No surgery was needed because the complaint was improved and there was no signs of acute airway obstruction and other complications.

In conclusion, a retropharungeal abscess in an adult patient was a rare case, which could be managed by closely monitored conservative antibiotic therapy, as long there was no complication, or signs of airway obstruction which needed incision and drainage.

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