Craniofacial and neck phlegmon with sepsis as a complication of the parotid gland abscess – a case report

Ropowica twarzoczaszki i szyi oraz sepsa jako powikłania ropnia ślinianki przyusznej – przypadek kliniczny

Teresa Ryczer[1,2], Katarzyna Męczkowska[1], Artur Niedzielski[1,2]

[1] *Department of Otolaryngology, Bielany Hospital Jerzy Popiełuszko, Warsaw, Poland*
[2] *Department of Pediatric Otolaryngology Centre of Postgraduate Medical Education, Warsaw, Poland*

Keywords

- parotid gland abscess
- craniofacial phlegmon
- neck phlegmon
- sepsis
- surgical drainage
- antibiotic therapy

Abstract

The diagnosis of acute bacterial parotitis usually does not cause much clinical concern due to the characteristic clinical signs and symptoms, such as pain and swelling of parotid gland associated with fever and elevated inflammatory markers in laboratory tests. Early diagnosis and accurate treatment result in fast recovery without complications. In rare cases, acute bacterial parotitis may cause severe complications, such as parotid gland abscess or parapharyngeal space phlegmon. Parapharyngeal space phlegmon is a severe, life-threatening condition. It can spread to craniofacial and neck fascial spaces, mediastinum, and lead to sepsis and septic shock. Craniofacial and neck phlegmon requires prompt surgical treatment and intensive antibiotic therapy.

In this case study, we present an 82-year-old woman with bacterial parotitis that resulted in multiple complications. The first complication was parotid gland abscess, which caused extended craniofacial and neck phlegmon that led to sepsis. As a result of immediate intensive treatment, which consisted of broad-spectrum antibiotic therapy, surgical drainage, and hydro-electrolyte imbalance management, the treatment ended in a success. The patient fully recovered and was discharged home in a good general condition.

Słowa kluczowe:

- ropień ślinianki przyusznej
- ropowica twarzoczaszki
- ropowica szyi
- sepsa
- drenaż chirurgiczny
- antybiotykoterapia

Streszczenie

Ostre bakteryjne zapalenie ślinianki przyusznej jest jednostką chorobową o typowych objawach klinicznych, takich jak ból i obrzęk w rzucie ślinianki przyusznej, gorączka, którym towarzyszą podwyższone wykładniki stanu zapalnego. Wczesne rozpoznanie i prawidłowe leczenie ostrego zapalenia ślinianki przyusznej powoduje szybkie wyleczenie. W rzadkich przypadkach ostre bakteryjne zapalenie ślinianki przyusznej może być przyczyną poważnych powikłań, takich jak ropień ślinianki przyusznej, czy ropowica przestrzeni przygardłowej. Ropowica przestrzeni przygardłowej jest ciężką, zagrażającą życiu chorobą, która może rozprzestrzeniać się w obrębie twarzoczaszki, w przestrzeniach powięziowych szyi oraz przechodzić do śródpiersia, a także powodować wstrząs septyczny. Ropowica twarzoczaszki i szyi wymaga podjęcia leczenia chirurgicznego w trybie pilnym oraz intensywnej antybiotykoterapii dożylnej.

W artykule przedstawiamy przypadek kliniczny 82-letniej pacjentki z ostrym bakteryjnym zapaleniem ślinianki przyusznej, które było przyczyną licznych powikłań. Początkowym powikłaniem był ropień ślinianki przyusznej, w wyniku którego rozwinęła się ropowica twarzoczaszki i szyi oraz wystąpił wstrząs septyczny. Dzięki wdrożeniu natychmiastowego i intensywnego leczenia, które obejmowało antybiotykoterapię o szerokim spektrum, drenaż chirurgiczny oraz wyrównanie gospodarki wodno-elektrolitowej, stan kliniczny pacjentki uległ poprawie i pacjentka w dobrym stanie ogólnym i miejscowym wróciła do domu.

*Address: *Artur Niedzielski, Department of Pediatric Otolaryngology Centre of Postgraduate Medical Education, ul. Cegłowska 80, 01-809 Warszawa, e-mail: artur.niedzielski@cmkp.edu.pl*
ISSN 2657-9669/
Published by Centrum Medyczne Kształcenia Podyplomowego

Introduction

Acute parotitis occurs at any age, but the peak incidence is in the older population over 70 years old (1, 2). Risk factors include poor oral cavity hygiene, sialolithiasis of the parotid gland, diabetes, cachexy, dehydration and electrolyte imbalance disorders (1,2). The most common bacteria causing mixed types of infections include streptococci, gram-negative bacilli, and anaerobes (1,3).

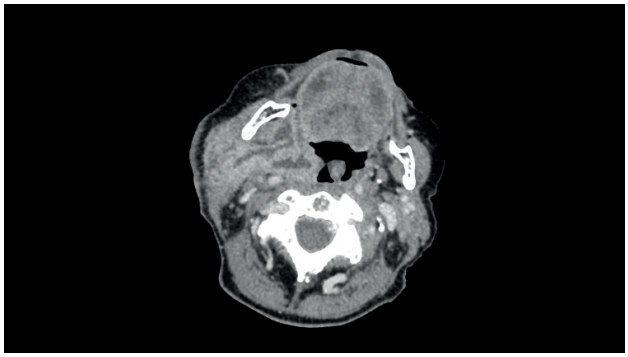
Acute parotitis usually does not cause diagnostic problems due to characteristic clinical signs and symptoms, which include pain and swelling of the parotid gland and associated fever. The treatment consists of broad-spectrum antibiotic therapy as well as fluid therapy (4,5). Early diagnosis and accurate treatment result in fast and total recovery. However, in rare cases, acute bacterial parotitis may occur with severe complications, such as parotid gland abscess, parapharyngeal space phlegmon or extended craniofacial and neck phlegmon, that could potentially lead to mediastinitis, sepsis, and septic shock (6,7).

Case report

An 82-year-old female patient was referred for an ENT consultation in the Emergency Care Unit due to the swelling in the right preauricular region and the sudden cognitive impairment. The patient was conscious but drowsy and confused, disoriented to the place and time. According to the patient's family, the woman was suffering from the swelling of the right preauricular region and the right ear pain for several days. She also had dysphagia. The previous medical history included arterial hypertension, advanced hearing loss, chronic tinnitus and the right ear tympanoplasty surgery in the past. ENT examination revealed large edema in the right preauricular region, which was hard and painful on palpation with some pus present in the oral cavity, together with dryness of the oral and throat mucosa, as well as the skin due to significant dehydration. The patient had a fever and low blood pressure of 81/47 mm Hg. The laboratory tests showed increased white blood cell count 32 660/ul and neutrophils count of 28 800/ul. The inflammatory markers were significantly increased with CRP 465,45 mg/l and procalcitonin 20,51 ng/ml. The cardiac markers levels were also elevated: troponin T– 0,360 ng/ml and CK-MB –11,37 ng/ml. There were signs of hypokalemia – potassium level was 3,73 mmol/l together with elevated creatinine level – 1,66 mg/dl. The electrocardiogram showed sinus rhythm and left bundle branch block. The ultrasound examination of the neck revealed heterogeneous mass with fluid collection in the right parotid gland region. The blood culture was performed. The empirical broad-spectrum intravenous antibiotic therapy was introduced – ceftriaxone 2 g once per day and clindamycin 600 mg 3 times per day. The woman also received intravenous fluid therapy and potassium supplementation.

The patient was admitted to the Otolaryngology Department where the initial treatment was continued. The woman was consulted by a cardiologist who performed the cardiac echo test which showed that the cardiac injury was the result of hypotony, acute renal insufficiency and sepsis, but there was no bacterial vegetation on the cardiac muscle, no valve pathology, and the global cardiac contractility was normal.

The needle puncture of the right parotid gland was performed but no pus was aspirated. After intravenous rehydration, significant improvement to the general condition and cognitive skills of the patient was observed. The renal function markers were normal. As the CRP levels increased to 495,63 mg/l, treatment with vancomycin 1 g twice per day



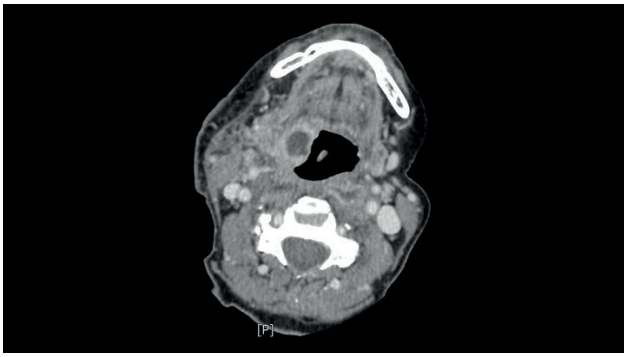


Fig. 1-2. The CT scans of the neck with contrast revealed the enlargement of the right parotid gland with numerous fluid collections in both lobes and in the right parapharyngeal space.

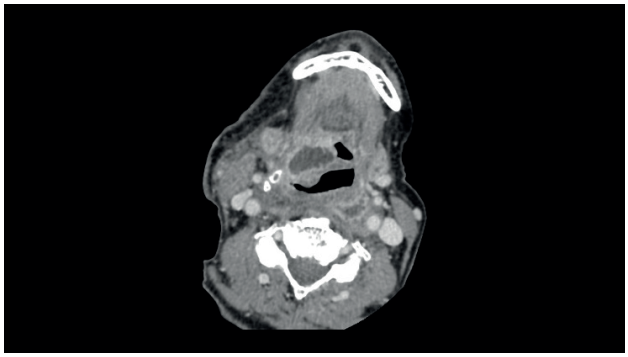


Fig. 3. The CT scan of the neck with contrast showing increased fluid collections in the right parapharyngeal space causing the narrowing of the throat.

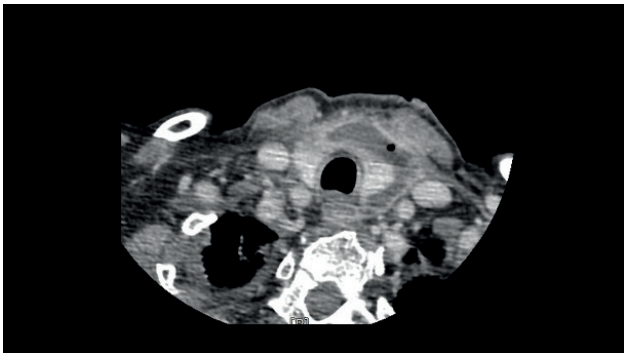


Fig. 4. The CT scan of the thorax with contrast showing fluid collections extended anteriorly to trachea till the level of superior mediastinal space.

intravenously was added to the treatment. Because of many crepitations upon lung auscultation, the chest X-ray was performed, which showed signs of pneumonia and pleural effusion. The patient had also hypoalbuminemia and a low total protein level.

The patient underwent another ultrasound examination of the neck which revealed a large fluid collection in the anterior region of the neck. The computed tomography of the neck with contrast revealed the enlargement of the right parotid gland with numerous fluid collections in both lobes, fluid collections which extended from the right pterygopalatine fossa and the left tonsil bilaterally within the lateral walls of the throat, behind the hyoid bone and anteriorly to the larynx and trachea till the level of superior mediastinal space (Fig. 1-4). The radiological findings were more profound on the right side causing the narrowing of the throat and its shift to the left. The patient then underwent surgical treatment.

The surgical drainage of the right parotid gland and the bilateral drainage of neck phlegmon was performed under general anesthesia. The blood culture test was received and it was positive for Streptococcus intermedius susceptible to ceftriaxone and clindamycin. The pus culture from the neck indicated Streptococcus anginosus susceptible to the same antibiotics.

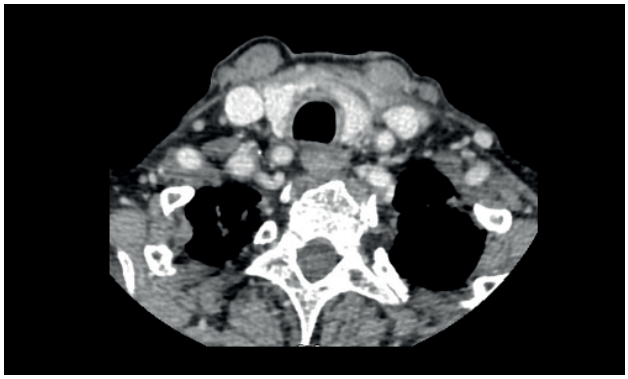
The patient's results were consulted by the microbiology department. The treatment with ceftriaxone and clindamycin was continued, but vancomycin was terminated. On the third day after surgery, the wound drains were removed. On the following days, the antiseptic lavage of the neck was performed for as long as there was pus draining out. Intensive fluid therapy, normalization of hydro-electrolyte imbalance and protein supplementation was continued.

Fig. 5. In the control CT scan of the neck with contrast the right parotid gland was smaller and the fluid collections within the parapharyngeal right space were significantly decreased.

In the control CT scan of the neck and thorax with contrast which was performed on the 5th day after surgery the radiological statement did not show relevant decrease of fluid collections in the neck as compared to the prior CT scan, however, the physical examination showed a significant clinical improvement and laboratory tests indicated a significant decrease of the inflammatory markers – CRP was 130,62 mg/l. In the CT scan of the neck and thorax with contrast done on the 14th day after surgery, the right parotid gland and the fluid collections were smaller. The control tests showed CRP 20,94 mg/l, WBC 63200/ul and neutrophils 3000/ul. The patient was discharged home. In concomitance with the microbiology department suggestions the patient was to comply with oral antibiotic therapy regimen – clindamycin 300 mg 3 times per day for 7 days and phenoxymethylpenicillin 1500000 IU 3 times per day for 6 weeks.

Conclusions

Acute bacterial parotitis may result in severe complications, such as parotid gland abscess and life-threatening conditions, including parapharyngeal space phlegmon and neck phlegmon, mediastinitis, sepsis and septic shock. As it commonly occurs in older age patients the risk factors also include cachexy, dehydration and hydro-electrolyte disbalance disorders, a successful prevention of these conditions, especially in this age group, is of significant importance (1,2). The first-line diagnostic tool for parotid gland diseases is ultrasonography as it is easily available and gives good radiological insight into differential diagnosis (8). However, if severe complications of acute bacterial parotitis are suspected, particularly parapharyngeal space and extended neck phlegmon, or mediastinitis, CT scan of neck and/or thorax with contrast should be immediately performed (2, 8, 9, 10, 11, 12). The management of parotid gland abscess includes broad-spectrum antibiotic therapy, and surgical drainage, which is mandatory in patients who also develop neck phlegmon (2, 4, 10, 12, 13). Due to various medical problems with which the patients with neck phlegmon are struggling which can also include mediastinitis and sepsis, it is crucial to underline the necessity of complex medical assessment of the patient’s general condition and medical therapy, especially incuding the hydro-electrolyte imbalance management. Parotid gland abscess and complicated neck phlegmon could be successfully treated, if immediate medical and surgical management is undertaken following careful and constant medical care (8).



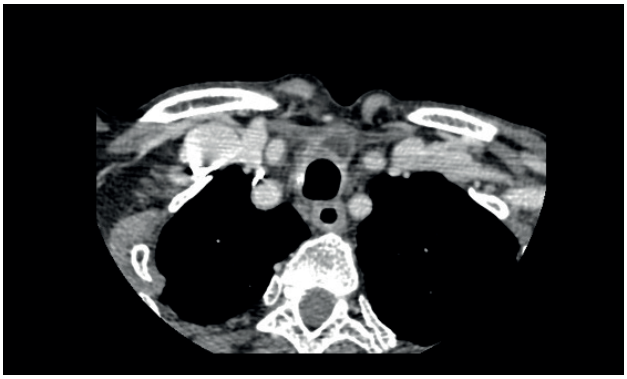


Fig. 6-7. CT scans of the thorax with contrast showed a significant decrease of fluid collections in the anterior region of the neck anteriorly to trachea and in the mediastinal space.

References

(1) Guzman Vinasco L, et al. Acute suppurative parotitis caused by Streptococcus pneumoniae in an HIV-infected man. BMJ Case Rep 2015.

(2) Favaretto N, Fasanaro E, Staffieri A, Marchese-Ragona R, Staffieri C, Giacomelli L, Stramare R, Ottaviano G, Marioni G. Deep neck infections originating from the major salivary glands. Am J Otolaryngol 2015 Jul-Aug; 36(4):559-64.

(3) Brook I. Acute bacterial suppurative parotitis: Microbiology and management. J Craniofacial Surg 2003; 14:37-40.

(4) Das R, Nath G, Mishra A. Clinico-Pathological Profile of Deep Neck Space Infection: A Prospective Study. Indian J Otolaryngol Head Neck Surg 2017 Sep; 69(3):282-290.

(5) Ozkan A, Ors CH, Kosar S, Ozisik Karaman HI. Parotid Abscess with Involvement of Facial Nerve Branches. J Coll Physicians Surg Pak. 2015 Aug; 25(8):613-4.

(6) Brito TP, Hazboun IM, Fernandes FL, Bento LR, Zappelini CEM, Chone CT, Crespo AN. Deep neck abscesses: study of 101 cases. Braz J Otorhinolaryngol 2017 May-Jun; 83(3):341-348.

(7) Gujrathi AB, Ambulgekar V, Kathait P. Deep neck space infection – A retrospective study of 270 cases at tertiary care center. World J Otorhinolaryngol Head Neck Surg 2016 Dec 22; 2(4):208-213.

(8) Kawczyński M, Amernik K, Kelar I, Jaworowska E, Paradowska-Opałka B. Zakażenia ropne głębokich przestrzeni szyi w Klinice Otolaryngologii PUM w okresie ostatnich 5 lat. Pol Przegląd Otorynolaryngol 2012; 4(1): 314-318.

(9) Kauffmann P, Cordesmeyer R, Tröltzsch M, Sömmer C, Laskawi R. Deep neck infections: A single-center analysis of 63 cases. Med Oral Patol Oral Cir Bucal 2017 Sep 1; 22(5):536-541.

(10) Alaani A, Griffiths H, Minhas SS, Olliff J, Drake Lee AB. Parapharyngeal abscess:diagnosis, complications and management in adults. Eur Arch Otorhinolaryngol 2005; 262:345-350.

(11) Seer Yee ML, et al. Predicting Neck Abscess with Contrast-Enhanced Computed Tomography. Advances in Otolaryngology 2014; 1-8.

(12) Czecior E, Pawlas P, Ścierski W, Namysłowski G, Misiołek M, Turecka L, Lisowska G, Polok A, Sowa P. Ropowica przestrzeni przygardłowej. Otolaryngol Pol 2008; LXII (4):486-488.

(13) Huang TT, Liu TC, Chen PR, Tseng FY, Yeh TH, Chen YS. Deep neck infection: analysis of 185 cases. Head Neck 2004 Oct; 26(10):854-60.