

## CASE REPORT

# Parapharyngeal Abscess in Immunocompromised Patients

Gani AN<sup>1</sup>, Abdullah A<sup>1</sup>, Hazim MYS<sup>1</sup>, Rozman Z<sup>2</sup>

<sup>1</sup>Department of Orthorhinolaryngology and <sup>2</sup>Department of Radiology, Faculty of Medicine, Universiti Kebangsaan Malaysia.

## ABSTRAK

Abses parafarinks adalah keadaan perubatan yang serius di mana ia boleh menyebabkan komplikasi yang mengancam nyawa. Insidens penyakit ini didapati berkurangan sejak penggunaan antibiotik. Kami melaporkan dua kes pengumpulan nanah di parapharyngeal di kalangan pesakit rendah tahap imuniti. Kami percaya bahawa diagnosis awal, rawatan antibiotik spektrum luas, pembedahan dan pengaliran nanah awal dapat mencegah komplikasi yang serius.

*Kata kunci:* Abses parafarinks, infeksi odontogenik, pengaliran nanah.

## ABSTRACT

Parapharyngeal abscess is a serious medical condition that may lead to life-threatening complications. Its incidence has dramatically decreased since the advent of antibiotics. We report two cases of parapharyngeal abscesses in immunocompromised patients. We believe that early diagnosis, broad-spectrum antibiotics, surgery and pus drainage can prevent serious complications.

*Key Words:* Parapharyngeal abscess, odontogenic infection, pus drainage.

## INTRODUCTION

The incidence of parapharyngeal abscess has dramatically decreased since the advent of antibiotics, but with delayed treatment it carries the potential for significant morbidity and mortality. The parapharyngeal space is located deep within the neck. This makes diagnosis of infections difficult because it is covered by a substantial amount of unaffected superficial soft tissue, therefore a parapharyngeal abscess may

be difficult to palpate when it is small. Odontogenic infections and upper airway infections are the main causes of parapharyngeal abscesses. Both can lead to cervical lymphadenitis and subsequent abscess formation (Huang et al 2005). An odontogenic source is more common in adult, whereas a pharyngeal source is more common in children (Amar et al 2004).

Here we report two cases of parapharyngeal abscesses in immunocompromised patients.

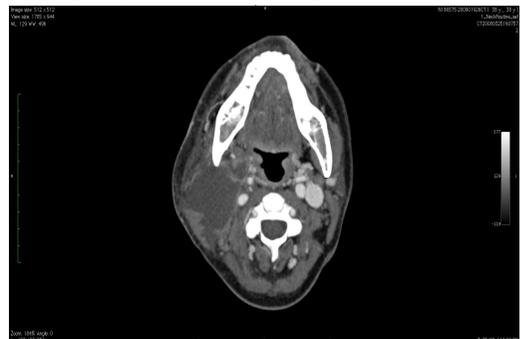
**Address for correspondence and reprint requests:** Dr Norhaslinda Abdul Gani, Department of Otorhinolaryngology, Faculty of Medicine, Universiti Kebangsaan Malaysia. Jalan Yaacob Latiff, Bandar Tun Razak, 56000 Cheras, Kuala Lumpur, Malaysia. Email: [haslinda.gani@yahoo.com](mailto:haslinda.gani@yahoo.com)

## CASE REPORT

### Case 1

A 38-year-old woman was diagnosed with thalassaemia major for the past 26 years. She underwent splenectomy 12 years ago and was recently diagnosed to have Hepatitis C. She presented with a two weeks history of progressive painful right neck swelling which was associated with dysphagia, odynophagia and fever. She developed acute pulmonary edema post-operatively and was nursed in the High Dependency Unit (HDU), under close monitoring by the hematology and anesthesiology team. The pulmonary edema resolved by day four post operatively. She was then discharged from HDU to the normal ward. The pus and blood culture and sensitivity revealed *Klebsiella* spp. and both were sensitive to ceftriaxone sodium (Rocephin). She was then put on IV Roce-

thrombosis of right internal jugular vein (Figure 1b). The patient was further stabilized by the hematology team. Right neck exploration and drainage of the abscess was carried out under general anesthesia after the patient's general condition was stabilized. Intra-operative findings revealed multiple loculated areas in the right parapharyngeal space, filled with 50cc thick pus with minimal slough. She developed acute pulmonary edema post-operatively and was nursed in the High Dependency Unit (HDU), under close monitoring by the hematology and anesthesiology team. The pulmonary edema resolved by day four post operatively. She was then discharged from HDU to the normal ward. The pus and blood culture and sensitivity revealed *Klebsiella* spp. and both were sensitive to ceftriaxone sodium (Rocephin). She was then put on IV Roce-



**Figure 1a:** An axial CT scan showed multiloculated lesion at parapharyngeal area



**Figure 1b:** Coronal view showed multiloculated lesion at parapharyngeal area and right internal jugular vein thrombosis

phin 1gm daily with dressing twice daily over the cervical wound. On the tenth post operative day, the patient was discharged and advised to come for daily dressing to the clinic nearest her home.

## Case 2

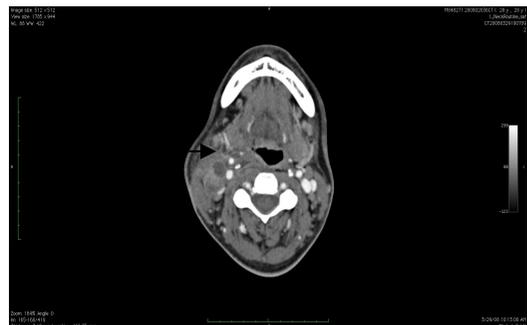
A 28 year-old woman, who was diagnosed to have Insulin Dependent Diabetes mellitus (IDDM) for 6 years, was recently diagnosed with Systemic lupus erythematosus (SLE) a month ago in which she was started on prednisolone. However, two weeks later she presented with swelling in the right neck. The swelling was associated with dysphagia, odynophagia and fever. However, there was no shortness of breath or stridor. She gave a history of a right retropharyngeal abscess four years prior to the present condition during which drainage was performed. Clinically she was febrile, with a temperature of 39°C on admission. Neck examination revealed a tender swollen ill-defined area involving the superior part of anterior triangle of the right neck. The skin overlying it was inflamed and tender. There was trismus and the oral cavity showed bulging of the right pharyngeal wall with pus noted. She was started on intravenous amoxicillin-clavulanic acid and metronidazole. Contrast enhance CT scan of the neck demonstrated multiloculated, parapharyngeal and retropharyngeal abscesses of the right neck with cervical lymphadenopathies (Figures 2a and 2b). She underwent incision and drainage on the second day of admission. Culture studies revealed *Klebsiella* spp. sensitive to amoxicillin-clavulanic acid. Microbiological culture for tuberculosis was negative. The patient made a rapid recovery and was discharged home after six days.

## DISCUSSION

The parapharyngeal space occupies an inverted pyramidal area bounded by multiple components of the fascial system.

The inferior limitation of this space is the greater cornua of the hyoid bone. The superior margin of the space is the skull base. Its medial border is formed by the lateral pharyngeal wall (ie, the superior pharyngeal constrictor and the tonsillar fossa). The posterior border is formed by the prevertebral fascia. The lateral border is the ramus of the mandible and the deep lobe of the parotid (Amar et al 2004). The anterior boundary is the pterygomandibular raphe. The parapharyngeal space can be subdivided into two compartments by the fascia of the tensor veli palatine muscle which runs obliquely through the parapharyngeal space from the eustachian tube and styloid process to its insertion on the lateral pterygoid plate (Myers et al 1997).

The internal maxillary artery, inferior alveolar nerve, lingual nerve, and auriculo-temporal nerve comprise the pre-styloid compartment. Infections in this compart-



**Figure 2a:** An axial view showed loculated lesion at parapharyngeal and retro-pharyngeal area



**Figure 2b:** Coronal view showed parapharyngeal fullness.

ment often give significant trismus. The post-styloid compartment contains the carotid sheath (carotid artery, internal jugular vein, vagus nerve) glossopharyngeal, hypoglossal nerves, sympathetic chain and lymphatics. It also contains the accessory nerve, which is somewhat protected from the pathologic processes in this region by its position behind the sternocleidomastoid muscle.

An odontogenic infection can cause a parapharyngeal abscess. It usually spread contiguously from the mandible or maxilla into the sublingual, submandibular or masticatory spaces and then spread into the parapharyngeal space directly. The most common symptoms of a parapharyngeal abscess are neck pain, odynophagia, dysphagia, neck swelling, fever, and trismus. Lateral pharyngeal wall medialization is the most common presenting sign in parapharyngeal abscesses (Bottin et al 2003). Both the patients presented with progressive painful neck swellings, associated with odynophagia, dysphagia and trismus.

Diabetes Mellitus (DM) is the most common systemic disease associated with parapharyngeal abscesses (Sethi et al 1991, Huang et al 2004, Bottin et al 2005). It has been established that lipopolysaccharide by bacteria and infection, mediate up regulation of cytokines synthesis. As shown in case 2, she was diagnosed to have IDDM six years ago, and she also gave a history of the retropharyngeal abscess, which was treated surgically. Her immune-compromised state further deteriorated after she was treated with prednisolone for her Systemic Lupus Erythematosus (SLE). Chronic hepatitis was also found one of the commonly associated with parapharyngeal abscess (Bottin et al 2005). Our first patient has thalassaemia major, underwent splenectomy and just recently diagnosed to be a hepatitis C carrier. This makes the patient more susceptible to infection.

Laboratory investigations usually revealed an elevated white blood count as in our

patients, except for patients with HIV infection or AIDS (Shashinder et al 2007). Bacteriologic pattern of parapharyngeal abscess is usually a mixed growth, which includes anaerobes and aerobes. Streptococcus viridians were the most commonly isolated organisms in the non-diabetic patients, consistently high with rate of odontogenic infections. Klebsilla pneumoniae was the most common organisms in diabetic patients (Huang et al 2005). In our patients, Klebsiella spp. was cultured. Broad-spectrum intravenous antibiotics should be started as soon as the diagnosis is suspected, because of the wide spectrum nature of the involved microorganisms. The chosen antibiotics should cover the suspected bacteria and later can be modified according to clinical response based on bacteriological culture and sensitivity results. Discussion with the microbiologists is important to decide the choice of antibiotics, if the patients do not respond to the initial antibiotic.

Contrast-enhanced CT scans (CECT) is the gold standard in the evaluation of deep neck infections. CT scans provides valuable information for the site and the extent of infection. Abscesses were seen as low-density lesions with rim enhancement, occasional air fluid levels, and loculations (Bottin et al 2003). We considered CECT to be part of the routine investigation. CT scan of the chest may be helpful if extension of abscess into the mediastinum was suspected. Otopantogram provide useful information in parapharyngeal abscess of odontogenic origin (Bottin et al 2003).

The conventional method of surgical approach for the parapharyngeal space incision and drainage is through an external skin incision made about two finger breath below the mandible. The sternocleidomastoid muscle and great vessels was retracted posteriorly. The parapharyngeal space was entered just anterior to the posterior belly of the digastric and under the submandibular gland. Blunt dissection is used to break up any

loculations (Amar et al 2004). The wound is left opened for continued drainage and dressing. We used this method in managing our patients in view of better pus collection and ease of dressing.

Another method is via the intraoral approach. This procedure is performed under general anaesthesia. The Boyle's mouth gag is placed in the patient's mouth. The mouth is opened to obtain adequate exposure of the oropharynx. The lateral pharyngeal wall is palpated intraorally, or sometimes bimanually to localize the abscess. Once localized, an 18-gauge needle is inserted transorally through the lateral pharyngeal wall and into the abscess cavity. The then pus is aspirated and incision made in the overlying mucosa. The whole dilatation with a large clamp is performed in a longitudinal manner. This wound is left opened for several operative days to allow continued drainage of the abscess into the oropharynx (Amar et al 2004). It is a safe and effective procedure, provided the CT scan obtained preoperatively shows the abscess is located medial to the great vessels of the neck (Amar et al 2004).

Duque reported another surgical intervention whereby intraoperative ultrasound is used during any external approach to the parapharyngeal space abscess when the abscess is difficult to identify with standard anatomic dissection (Duque et al 2007).

Feeding should be addressed in view of prolonged course of the disease, which needs nutritional support by nasogastric tube feeding. Tracheostomy may be an option in cases of difficult intubations or incidental rupture of the abscess (Alaani et al 2003). Both of our patients were nursed in HDU for closed monitoring of the general condition. In case 1, she developed acute pulmonary edema. She had aggressive treatment in HDU and was transferred to medical ward on day 4 post operation. Delay in treatment of parapharyngeal abscesses can result in life threatening complications such as airway obstruction,

mediastinitis, vascular complication, septicemia and mortality.

## CONCLUSION

Even though the advent of the antibiotic has dramatically decreased the incidence of deep neck infection, they remain prevalent especially in immune-compromised patient. Early and aggressive management of parapharyngeal abscess can prevent major complications such as mediastinitis, vascular complications, septicemia, retropharyngeal abscess mortality. Contrast enhanced CT scans has preoperative diagnostic value in parapharyngeal abscess and surgical intervention remains the treatment of choice.

## REFERENCES

- Amar, Y.G. & Manoukian, J.J. 2004 Intraoral drainage: Recommended as the initial approach for the treatment of parapharyngeal abscesses. *Otolaryngology-Head and Neck Surgery* 130 (6):676-680.
- Bottin, R., Marioni, G., Rinaldi, R., Boninsegna, M., Salvadori, L. & Staffieri, A. 2003. *European Archives of Oto-rhino-laryngology* 260(10):576-579.
- Duque, C.S., Guerra L, & Roy S. 2007. Use of intraoperative ultrasound for localizing difficult parapharyngeal space abscess in children. *International Journal of Pediatric Otorhinolaryngol* 71: 375-378.
- Huang, T.T., Liu, T.C., Chen, P.R., Tseng, F.Y., Yeh, T.H. & Chen YS. 2004. Deep neck abscess infectio:Analysis of 185 cases. *Head & Neck* 26(10):854-860.
- Huang, T.T., Tseng, M.D., Liu, T.C., Hsu, C.J. & Chen, Y.S. 2005. Deep neck infection in diabetic patients: Comparison of clinical picture and outcomes with nondiabetic patients. *Otolaryngology- Head and Neck Surgery* 132(6):943-947.
- McClay, J.E., Murray, A.D. & Booth, T. 2002. Intravenous antibiotic therapy for deep neck abscesses defined by computed tomography. *Acrh otolaryngol Head Neck Surg* 129(11):1207-1212.
- Myers, E.N. 1997. *Operative Otolaryngology Head and Neck Surgery*. W.B. Saunders Company.
- Parhiscar, A. & Gady, H.E. 2001. Deep Neck Abscess: A Retrospective Review of 210 Cases. *Ann Otol Rhinol Laryngol* 110:1051-1054.

- Sethi, D.S. & Stanley, R.E. 1991 Parapharyngeal abscesses. *J. Laryngol Otol.* 105(12):1025-30.
- Shashinder, S. & Prepagaran, N. 2007: Apurulent parapharyngeal abscess. *The internet Journal of Head and Neck Surgery* 1: 2
- Shichel, J.Y., Attal, P. & Hocwald E. 2006 redefining parapharyngeal space infection. *Ann Otol Rhinol Laryngol* 115(2):117-23.