Retropharyngeal Space Infection

Somchai Srirompotong MD*,
Supaporn Srirompotong MD*, Patchareeporn Saeseow MD*

** Department of Otolaryngology, Faculty of Medicine, Khon Kaen University*

Retropharyngeal space infections are relatively rare since the widespread use of modern antibiotics. In children, retropharyngeal space infections usually occur following an upper respiratory tract infection, while in adults they are usually caused by trauma, foreign bodies or extension from adjacent spaces. The authors reviewed 12 patients with retropharyngeal space infection between July 1996 and June 2002. Age, sex, duration of symptoms and hospitalization time, clinical presentation, etiology, underlying disease, bacteriology, treatment and complications were analyzed. Widening of the prevertebral soft tissue as seen on a plain film of the lateral neck was the most important diagnostic tool.

Fever was the most common symptom (91.6%) and showed a high prevalence in adult populations (66.6%). Half of the cases were caused by ingestion of a foreign body, Nine cases underwent surgical drainage which was positive in eight cases (88.8%). Staph. aureus, K. pneumoniae and Enterobacter species were the predominant pathogens. Early diagnosis and appropriate use of antibiotics lessened morbidity. Only two cases had postoperative complications and both recovered.

Keywords : *Retropharyngeal space, Infection*

J Med Assoc Thai 2004; 87(4): 382-5

Since the advent of modern antibiotics retropharyngeal space infections are uncommon but still potentially lethal. In children, they usually occur following acute infections of the throat, which then spreads to the retropharyngeal area by direct continuity or by the lymphatics to the retropharyngeal lymph nodes[1,2]. In adults, history of ingestion of a foreign body[3], orotracheal intubation[4,5], recent endoscopic procedure[6] and external neck trauma[7,8] may cause retropharyngeal space infections.

The clinical presentation of a retropharyngeal space infection in children differs from that in adults, and is often difficult to diagnose, particularly in small children[9]. Plain film of the lateral neck is often all that is needed to make a diagnosis[10,11]; a widened soft tissue shadow that overlies the cervical vertebrae is characteristic. Criteria for the normal dimensions of the retropharyngeal and retrotracheal space were determined by Wholey et al[12]. The normal dimensions of the retropharyngeal space in both children and adults are between four and seven mm, measured at level C2. The retrotracheal space, measured at level C6 should be less than 14 mm in children and 22 mm in adults. The aim of the present study was to present the clinical manifestations, treatment and complications of retropharyngeal space infections as encountered at Srinagarind University Hospital in Northeast Thailand.

Correspondence to : Srirompotong S, Department of Otolaryngology, Faculty of Medicine, Khon Kaen University, Khon Kaen 40002, Thailand. Phone:0-4334-8396, Fax: 0-4324-3336, E-mail: srirompotong@ yahoo.com

Material and Method

The authors reviewed the clinical records of patients diagnosed with retropharyngeal space infection and all of them presented with widening of the retropha-ryngeal soft tissue as seen on a lateral view of plain film of the soft tissue of the neck. Twelve patients were treated between July 1996 and June 2002, at the Department of Otolaryngology, Srinagarind Hospital, Khon Kaen University, Thailand. All cases were reviewed concerning sex, age, duration of symptoms and hospitalization, clinical presentation, etiology, underlying disease, culture for aerobic bacteria, treatment and complications.

Table 1. Clinical status of twelve patients with retropharyngeal space infections

Case No.	Sex/age	Duration of symptom	Underlying disease	Etiology	Surgically drainage	Bacteriology	Antibiotic	Hospitalization
1	M/3 mo	3d	-	Upper respiratory tract infection	Positive	*Staphylococcus aureus*	Cloxacillin	12d
2	F/3 mo	45d	Right upper lung atelectasis	Endoscopy 2 times	Positive	*Staphylococcus aureus*	Cloxacillin	51d
3	M/2Y	20d	-	Upper respiratory tract infection	Positive	*Hemophilus influenza*e	Amoxicillin-clavulanic acid	11d
4	F/7Y	5d	-	Foreign body	No	-	Cloxacillin	4d
5	M/26Y	7d	-	Foreign body	Positive	No growth	Penicillin +metronidazole	9d
6	F/37Y	7d	Diabetic	Foreign body	Positive	*Klebsiella pneumoniae*	Penicillin+gentamicin	16d
7	M/47Y	5d	-	Odontogenic	Positive	*Enterobacter* species	Clindamycin+gentamicin	10d
8	F/49Y	6d	-	Foreign body	No	-	Penicillin	9d
9	F/53Y	7d	-	Foreign body	No	-	Clindamycin	8d
10	F/67Y	14d	-	-	Negative	No growth	Penicillin	10d
11	F/71Y	2d	Diabetic	Foreign body	Positive	*Klebsiella pneumoniae* *Enterobacter* species	Amoxicillin-clavulanic acid+gentamicin	15d
12	F/78Y	6d	Diabetic	-	Positive	No growth	Amoxicillin-clavulanic acid+amikacin	15d

Results

A total of 12 patients (eight females, four males) averaging 36.5 years (range, 3 months to 77 years), were diagnosed and treated for retropharyngeal space infections (Table 1). The mean duration of symptoms to the time of diagnosis was 10.6 days (range, 2 to 45 days) and hospitalization time averaged 14.1 days (range, 4 to 51 days). Three patients had diabetes mellitus and one had right upper lung atelectasis.

Etiology was recorded as secondary to swallowing a foreign body in six cases, a recent history of an upper respiratory tract infection in two, endoscopy in one, an odontogenic infection in one, and idiopathic in two. The presenting symptoms and signs of retropharyngeal space infections are presented in Table 2. The most common symptom was fever noted by nearly every patient (91.6%). A lateral view of the plain film of the soft tissue of the neck was taken, which revealed widening of the prevertebral soft tissue space in all cases.

Treatment consisted of intravenous antibiotics and surgical drainage in nine cases. The remaining three received intravenous antibiotics alone. All surgical cases were accomplished externally and eight cases yielded positive results. The microorganisms isolated from the discharge in six of the nine surgically drained cases were predominantly *Staph. aureus*, *K. pneumoniae* and *Enterobacter* species. No bacterial growth was obtained in three cases. Anaerobic cultures were not done. The blood and pus cultures for one case (patient 6) grew *K. pneumoniae*. A CT scan was requested for one case (patient 11) after the first external drainage was performed and revealed retention of pus and mediastinitis, so another external surgical drainage was repeated. Two patients had post-operative complications; one case of mediastinitis (patient 11), another case had upper gastrointestinal bleeding (patient 10).

Table 2. Clinical presentation

Symptoms&signs	Number of patients (n=12)	Occurrence in Patient #
Fever	11/12	1,3,4,5,6,7,8,9,10,11,12
Sore throat	8/12	4,5,6,8,9,10,11,12
Odynophagia	7/12	1,5,6,7,8,11,12
Neck swelling	6/12	1,2,7,8,9,11
Dysphagia	6/12	4,5,6,9,10,11
Torticollis	5/12	2,4,7,9,10
Respiratory distress	4/12	1,2,3,7
Trismus	1/12	7
Bulging of posterior pharyngeal wall	7/12	1,2,3,5,8,11,12
Subcutaneous emphysema	1/12	11

Discussion

In the pre-antibiotic era, retropharyngeal space infections were most common in very young children[1,13], but in the present study, which included patients with a wide range of ages, showed a greater prevalence in adults (66.6%). The literature[10,14,15]

reports a slight male predominance but the present series showed 2:1 female predominance.

A history of preceding upper respiratory tract infection is most common in children under five, as they possess the largest number of retropharyngeal lymph nodes[10]. In the present study, however, children under five numbered only 3 (of 12); two of whom had a history of a preceding upper respiratory tract infection. In patients over five, the most common cause of infection was the ingestion of a foreign body. One case (patient 7) was odontogenic in origin; an abscess originated in the parapharyngeal space and had spread to the retropharyngeal space.

The clinical presentations in the present study were consistent with those reported in other studies, namely: fever, sore throat, odynophagia, neck swelling, dysphagia and torticolis. Bulging of the posterior pharyngeal wall was the most common physical sign[1,13] and there were seven such presentations (58.3%) in the present study. A lateral view of plain film of the soft tissue of the neck was requested and the diagnostic abnormal finding in all cases was increased prevertebral soft tissue as defined by Wholey et al in 1958[12]. Other helpful radiological signs included air in the prevertebral soft tissue, loss of normal lordotic curvature of the spine and evidence of a foreign body.

Nine patients were clinically diagnosed with retropharyngeal abscesses and eight patients had positive surgical drainage. Aerobic cultures were done routinely in all patients who had surgical drainage. Results were positive in six patients (66.6%). Many studies have demonstrated that most retropharyngeal abscesses yielded polymicrobial organisms with *Staphylococcus aureus, Streptococcus species* and anaerobes predominating[16,17]. The authors isolated both aerobic gram-positive and gram-negative organisms. Perhaps the higher number of diabetic and older patients explains the increased incidence of aerobic gram-negative organisms.

There were post-operative complications in two cases; one case with upper gastointestinal bleeding, the other case had mediastinitis. The mediastinitis was caused by direct extension from the retropharyngeal space, and resolved after surgical drainage. There was no mortality in the present study.

Conclusion

Retropharyngeal space infections may now be more common in adults. In the present study, ingestion of a foreign body was the most common etiology. Aerobic gram-negative organisms, though an atypical finding in retropharyngeal space infection, predominated; perhaps because of underlying diabetics and older age. Early diagnosis and proper use of antibiotics mitigated the severity of these infections. There was no mortality, and only one case had mediastinitis requiring repeated surgical drainage.

Acknowledgment

The authors wish to thank Mr.Bryan Roderick Hamman for assistance with the English-language presentation of the paper.

References

1. Grodinsky M. Retropharyngeal and lateral pharyngeal abscess: an anatomic and clinical study. Ann Surg 1939; 110: 177-99.
2. Gaglani MJ, Edwards MS. Clinical indicators of childhood retropharyngeal abscess. Am J Emerg Med 1995; 13: 333-6.
3. Frank I. Retropharyngeal abscess. JAMA 1921; 77: 517-22.
4. Heath LK, Peirce TH. Retropharyngeal abscess following endotracheal intubation. Chest 1977; 72: 776-7.
5. Wong YK, Novotny GM. Retropharyngeal space-a review of anatomy, pathology and clinical presentation. J Otolaryngol 1978; 7: 528-36.
6. Heller AM, Hohl R, Madhavan T, Wong K. Retropharyngeal abscess after endoscopic retrograde cholangiopancreatography: an uncommon but potentially fatal complication. South Med J 1978; 71: 219-21.
7. Pickle JM. Retropharyngeal abscess complicating a neck wound (a case report). J Laryngol Otol 1988; 102: 552-3.
8. Husaru AD, Nedzelski JM. Retropharyngeal abscess and upper airway obstruction. J Otolaryngol 1979; 8: 443-7.
9. Levitt GW. Cervical fascia and deep neck infections. Laryngoscope 1970; 80: 409-35.
10. Goldenberg D, Golz A, Joachims HZ. Retropharyngeal abscess: a clinical review. J Laryngol Otol 1997: 111: 546-50.
11. Barratt GE, Koopmann CF Jr, Coulthard SW. Retropharyngeal abscess--a ten-year experience. Laryngoscope 1984; 94: 455-63.
12. Wholey MH, Bruwer AJ, Baker HL Jr. The lateral roentgenogram of the neck; with comments on the atlanto-odontoid-basion relationship. Radiology 1958; 71: 350-6.
13. Brow JM. Acute retropharyngeal abscess in children. Laryngoscope 1919; 29: 9-12.
14. Coulthard M, Isaacs D. Retropharyngeal abscess. Arch Dis child 1991; 66: 1227-30.
15. Gianoli GJ, Espinola TE, Guarisco JL, Miller RH. Retropharyngeal space infection: changing trends.

Otolaryngol Head Neck Surg 1991; 105: 92-100.
16. Brook I. Microbiology of retropharyngeal abscesses in children. Am J Dis Child 1987; 141: 202-4.
17. Thompson JW, Cohen SR, Reddix P. Retropharyngeal abscess in children: a retrospective and historial analysis. Laryngoscope 1988; 98: 589-92.

การติดเชื้อบริเวณโพรงหลังคอหอย

สมชาย ศรีร่มโพธิ์ทอง, สุภาภรณ์ ศรีร่มโพธิ์ทอง, พัชรีพร แซ่เซียว

ปัจจุบันมีการใช้ยาปฏิชีวนะกันอย่างแพร่หลาย ทำให้การติดเชื้อบริเวณหลังคอหอยพบได้น้อย ในเด็กการติดเชื้อบริเวณโพรง หลังคอหอย มักจะเกิดหลังการติดเชื้อทางเดินหายใจส่วนบน ในผู้ใหญ่ส่วนมากเกิดตามหลังการบาดเจ็บบริเวณคอหอย การมีสิ่งแปลกปลอมติดคอหอย หรือ ลุกลามจากการติดเชื้อบริเวณโพรงข้างเคียง ผู้วิจัยได้รวบรวมผู้ป่วยที่มีการติดเชื้อบริเวณหลังคอหอยจำนวน 12 คน ระหว่าง เดือนกรกฎาคม พ.ศ. 2539 ถึงเดือนมิถุนายน พ.ศ. 2545 โดยรวบรวมเกี่ยวกับ อายุ เพศ ระยะเวลาที่มีอาการก่อนมาพบแพทย์ ระยะเวลาที่นอนโรงพยาบาล อาการแสดง สาเหตุ โรคประจำตัว เชื้อที่เป็นต้นเหตุ การรักษา และภาวะแทรกซ้อน ผู้ป่วยทุกรายตรวจภาพรังสีด้านข้างของคอ พบเนื้อเยื่อบริเวณด้านหน้าของกระดูกสันหลังส่วนนี้หนาขึ้นกว่าปกติ

อาการที่พบบ่อยที่สุดได้แก่ มีไข้ (ร้อยละ 91.6) ผู้ป่วยส่วนมากเป็นผู้ใหญ่ (ร้อยละ 66.6) ครึ่งหนึ่งของผู้ป่วยมีสาเหตุเกิดจากสิ่งแปลกปลอมติดคอหอย ผู้ป่วย 9 ราย ได้รับการผ่าตัด และพบหนอง 8 ราย (ร้อยละ 88.8) เชื้อที่เป็นต้นเหตุที่พบบ่อย ได้แก่ เชื้อ Staph. aureus, K. pneumoniae และ Enterobacter species ปัจจุบันการวินิจฉัยกระทำได้รวดเร็ว และมีการใช้ยาปฏิชีวนะที่แพร่หลาย ทำให้ภาวะแทรกซ้อนจากการติดเชื้อมีจำนวนลดลง มีผู้ป่วย 2 ราย ที่มีภาวะแทรกซ้อนเกิดขึ้น แต่ทุกรายก็หายจากการติดเชื้อ