

Retropharyngeal Abscess in an adult with Pneumonia during COVID-19 Outbreak in China

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Case report

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Abstract

Background: Retropharyngeal abscesses are rarely reported in adults and occur mostly in patients with immunocompromise or as a foreign body complication. Admittedly, the treatment of retropharyngeal abscesses frequently involves surgical drainage to achieve the best results. However, when retropharyngeal abscesses occurred in a highly suspected patient with COVID-19, the managements and treatments should be caution in order to prevent the spread of the virus.

Case presentation: On Feb. 13, a 40-year-old male with retropharyngeal abscesses turned to our department complaining dyspnea and dysphagia. In addition, his chest CT scan shows a suspected COVID-19 infection, thus making out Multiple Disciplinary Team (MDT) determine to perform percutaneous drainage and catheterization through left anterior cervical approach under the guidance of B-ultrasound. Finally, the patient recovered and was discharged from the hospital on Feb. 27 after 14 days of isolation. There was no recurrence after half a year follow-up.

Conclusions: By presenting this case, we aim at raising awareness of different surgical drainage methods and summarizing our experience in the management of retropharyngeal abscesses during the outbreak of COVID-19.

Background

Retropharyngeal abscess is a serious and occasionally life-threatening infection in the deep spaces of the neck in that the special anatomical location and the potential to obstruct the upper airway[1]. These abscesses occur more frequently in children because of the abundance of retropharyngeal lymph nodes[2]. In adults, they are rarely reported and most of the reports suggest that the occurrence is related to immunocompromised condition or local trauma, such as foreign body ingestion or instrumental procedures[3]. Therefore, retropharyngeal abscess requires promptly diagnosis and timely treatments, especially surgical drainage. However, during the outbreak of COVID-19, almost all the infectious diseases associated with fever will attract the attention of medical staff. How to deal with the other health problems of highly suspected patients with COVID-19 has become a hot topic nowadays. The case reports our experience on how to deal with the retropharyngeal abscess occurred in a highly suspected patient with COVID-19.

Case Presentation

A 40-year-old male with low-grade fever (37.5°C) turned to our department complaining 1 week of sore throat, cervicodynia and dysphagia in Feb. The chest CT scan suggested a disputable COVID-19, as shown in Fig. 1A, and he has a suspicious contact history with a COVID-19 patient during seeking medical treatment. Although the blood routine test showed that white blood cells were $18 \times 10^9/L$, percentage of neutrophils were 79.3%, percentage of lymphocytes were 7.4%, and two-time nucleic acid tests were both negative, the possibility of COVID-19 could not be completely excluded. Therefore, the

patient was admitted to the transitional ward, which was a separate room for clinical diagnosis of highly suspected patients with COVID-19. One week after treatment with the combination of Linezolid, Imipenem, Azithromycin and Metronidazole, the symptoms didn't improve at all. The condition of the patient was poor because of dysphagia and a 5-year history of poorly controlled diabetes (Weight reduction of about 10 kg in a month, albumin: 32.5 g/L, serum sodium: 126 mmol/L, blood chlorine: 84 mmol/L; Blood gas analysis suggests metabolic acidosis, fasting blood glucose: 13.3 mmol/L, glycosylated hemoglobin: 14.1%, Urine sugar +, Urine ketone body +++). Cervical MRI examination revealed anterior vertebral abscess at C2-T2 level (Figs. 1B, C, D). Finally, the Multiple Disciplinary Team (MDT) decided to perform percutaneous drainage and catheterization through left anterior cervical approach under the guidance of B-ultrasound. About 350 mL of tawny viscous pus was extracted by puncture, and then a tube was placed for continuous drainage after washing the purulent cavity with metronidazole sodium chloride solution. Immediately after operation, the dysphagia recovered well. After continuous drainage and anti-infective treatment, the chest CT and cervical MRI were re-examined (Fig. 1E, F, G, H). Eventually, the patient recovered and was discharged from the hospital on Feb. 27 after 14 days of isolation. There was no recurrence after half a year follow-up.

Discussion And Conclusion

Retropharyngeal abscess has been documented worldwide, which can present an immediate life-threatening emergency, with potential for airway compromise and other catastrophic complications[4]. The retropharyngeal space, extends from the skull base to the chest, lies posterior to the pharynx, bound by the buccopharyngeal fascia anteriorly, the prevertebral fascia posteriorly, and the carotid sheaths laterally[5].

It is reported that retropharyngeal abscess is more common in children between the ages of 2 to 4 than in adults, and the mortality rate estimated between 1% and 2%[6]. Once descending mediastinitis occurs, the mortality rate approaches 25%, despite the use of antibiotic therapy[7, 8]. Moreover a study in Germany of 234 adults with deep space infections of the neck shows the mortality rate was 2.6%, which mainly due to these abscesses association with airway obstruction, mediastinitis, aspiration pneumonia, epidural abscess, jugular venous thrombosis, necrotizing fasciitis, sepsis, and erosion into the carotid artery[9]. Compared to children with the abundance of retropharyngeal lymph nodes, adults abscesses is rarely caused by nasal or pharyngeal infection but usually secondary to local trauma, such as foreign body ingestion or instrumental procedures[10, 11]. In our case, the principal etiology might be immunocompromised condition caused by long-term untreated diabetes mellitus and severe lung infection.

Recent studies have helped clarify the clinical diagnosis of retropharyngeal abscess is based on the specific imaging tests including lateral neck radiograph, neck CT or MRI scan and neck ultrasound rather than nonspecific and variable clinical symptoms such as sore throat, fever, neck pain, and dyspnoea[12–15]. The MRI scan performed an important role in diagnosis of our case, within which the shape, size

and boundary of the abscess are all clear at a glance. In addition, neck ultrasound contributes more to the treatments than the diagnosis because of its real-time and portability.

In the case, in order to reduce the possibility of pathogen transmission, the patient was treated in the transitional ward, which is a separate room for suspected COVID-19 patients, and the operation was completed in an independent laminar flow operating room. The conventional surgical treatment is drainage via lateral cervical incision and oropharyngeal puncture. However, we chose the percutaneous drainage and catheterization under the guidance of B-ultrasound for several reasons. Firstly, the local anesthesia can not only reduce the risk of anesthesia in patients with pneumonia, but also effectively prevent the spread of infection via respiratory secretions and aerosol. Secondly, The abscess is huge in size, from the oropharynx to the top of the mediastinum, with the two sides clinging to the carotid sheath. Therefore, percutaneous drainage is the most minimally invasive and the least risky, compared with drainage via lateral cervical incision and oropharyngeal puncture.

Declarations

FUNDING

None

AUTHOR CONTRIBUTIONS

All the authors are doctors who have participated in the diagnosis, nursing and operation of the patient. Among them, Huanhai Liu and Jianchun Liao are the deputy chief physician and chief physician, respectively. Haibin Liu is the attending physician of the patient. Tianyu Wang and Caiquan Liang are the resident physician of the patient. Hang Zhang is the sonologist who helped in performing the operation. Caiquan Liang and Haibin Liu contributed to care for the patient; Tianyu Wang contributed to clinical data collecting and manuscript writing; Huanhai Liu and Jianchun Liao helped in diagnosis, surgical treatment, manuscript revision and the final approval of the manuscript.

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ETHICAL APPROVAL AND COSENT TO PATICIPATE

The case was approved by the Medical Ethics Committee, Shanghai Changzheng Hospital. Written informed consent was obtained from individual or guardian participants.

AVAILABILITY OF DATA AND MATERIALS

The datasets used or analysed during the current study are available from the corresponding author on reasonable request

AUTHOR CONTRIBUTIONS

All the authors are doctors who have participated in the diagnosis, nursing and operation of the patient. Among them, Huanhai Liu and Jianchun Liao are the deputy chief physician and chief physician, respectively. Haibin Liu is the attending physician of the patient. Tianyu Wang and Caiquan Liang are the resident physician of the patient. Hang Zhang is the sonologist who helped in performing the operation. Caiquan Liang and Haibin Liu contributed to care for the patient; Tianyu Wang contributed to clinical data collecting and manuscript writing; Huanhai Liu and Jianchun Liao helped in diagnosis, surgical treatment, manuscript revision and the final approval of the manuscript.

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DECLARATION OF INTERESTS

All authors declare no potential conflict of interest.

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Figures

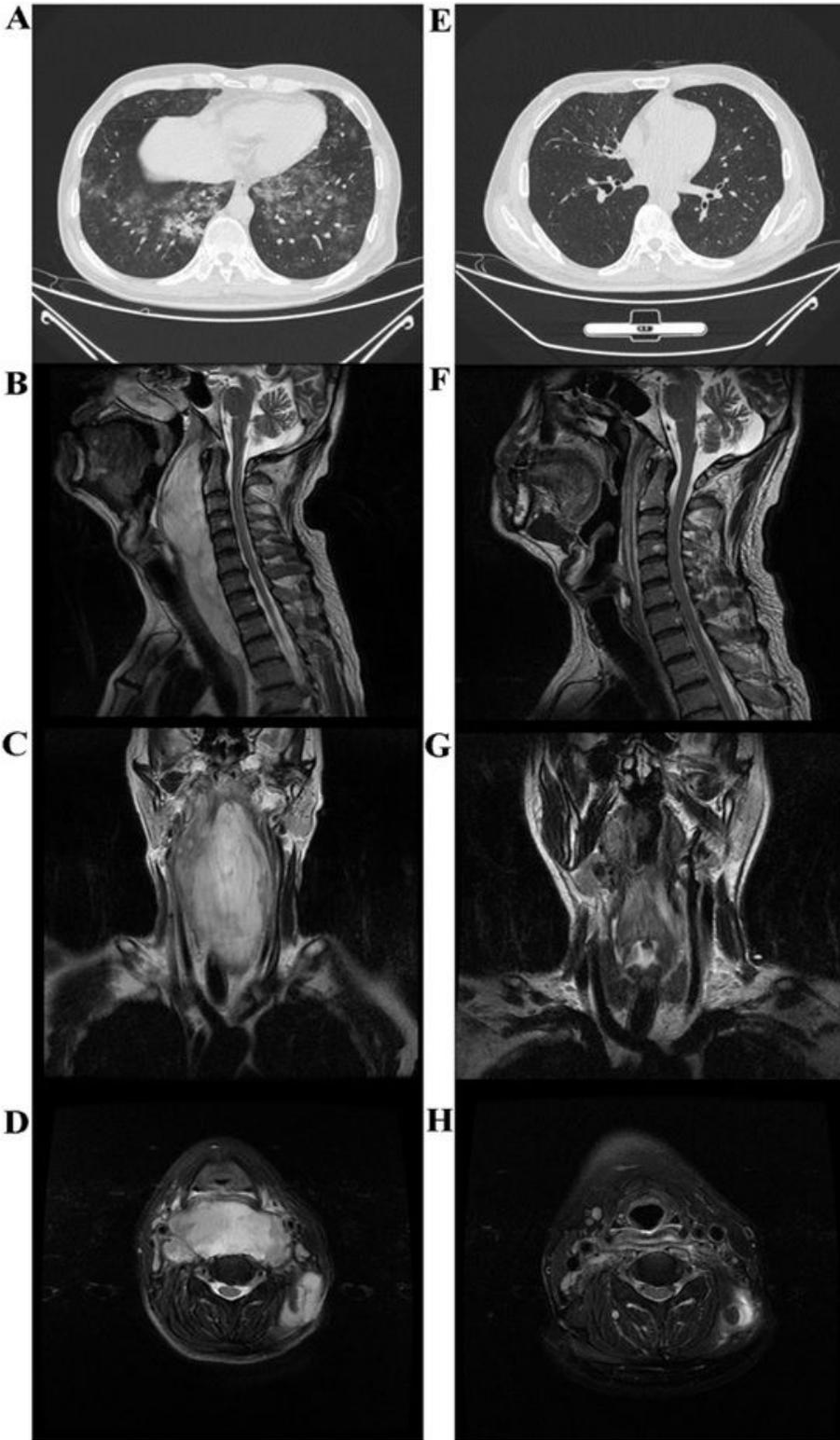


Figure 1

A-H are the results of chest CT scan and cervical MRI scan during hospitalization, of which A-D are the results of preoperative examination and E-H are the results of postoperative examination. A shows scattered ground glass patchy shadows of bilateral lungs. B shows anterior lesions of vertebral body in sagittal plane, which spread from the oropharynx to the top of mediastinum and is suspected of the abscess of posterior pharyngeal wall. C shows the abscess base in coronal plane, which is close to the

carotid sheath on both sides and the mediastinum below. D shows that the abscess is huge and close to the carotid sheath of both sides in the horizontal plane. In Figure E, the bilateral pneumonia improves significantly compared with Figure A. In Figures F-H, the abscess almost disappeared and residual abscess cavity was found.

Supplementary Files

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