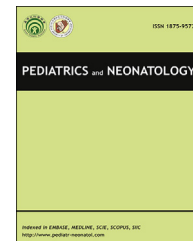


Available online at www.sciencedirect.com

ScienceDirect

journal homepage: <http://www.pediatr-neonatol.com>

ORIGINAL ARTICLE

Surgical Management of Complicated Necrotizing Pneumonia in Children

Jin-Yao Lai*, Wendy Yang, Yung-Ching Ming

Division of Pediatric Surgery, Department of Surgery, Chang Gung Memorial Hospital, Chang Gung University, College of Medicine, Linkou, Taiwan

Received Mar 3, 2016; received in revised form May 22, 2016; accepted Jun 12, 2016

Available online ■ ■ ■

Key Words

decortication;
lobectomy;
necrotizing
pneumonia

Background: There are no well-established indications for the surgical management of acute necrotizing pneumonitis in children. This study presents our experience regarding this challenging topic.

Methods: Between 2002 and 2009, 56 necrotizing pneumonitis patients with empyema were treated surgically. The outcomes were analyzed retrospectively. Computed tomography findings of massive lung necrosis or large cavities involving more than 50% of the involved lobe were deemed to be complicated necrotizing pneumonitis. Patients without the above indications were considered uncomplicated.

Results: Thirty-one cases were uncomplicated and 25 were complicated. Operative procedures included 38 decortications (31 uncomplicated and seven complicated), 14 wedge resections, and four lobectomies (complicated only). Preoperatively, patients with complicated necrotizing pneumonia had a higher incidence of pneumothorax (32% vs. 14.3%; $p = 0.001$), endotracheal intubation (44% vs. 9.7%; $p = 0.008$), and hemolytic uremic syndrome (20% vs. 3.2%; $p = 0.01$). These patients also had higher incidences of intraoperative transfusion (68% vs. 9.7%; $p = 0.03$), major postoperative complications (16% vs. 0%; $p = 0.02$), reoperations (16% vs. 0%; $p = 0.02$), and longer postoperative stay (19.8 ± 24.2 days vs. 11.2 ± 5.8 days; $p = 0.03$). Four complicated patients, who initially had decortications and limited resections, underwent reoperations. Compared with uncomplicated patients, those who underwent decortications and wedge resection required longer postoperative stays (23.6 ± 9.9 days, $p < 0.01$ and 21.1 ± 30.7 days, $p = 0.04$, respectively), whereas patients who had lobectomy had a similar duration of recovery (9.0 ± 2.1 days, $p = 0.23$). All patients improved significantly at follow-up.

Conclusion: Children with complicated necrotizing pneumonitis have more preoperative morbidities, more major postoperative complications, and require longer postoperative stays. Aggressive surgical treatment results in significant clinical improvement. Lobectomy in

* Corresponding author. Division of Pediatric Surgery, Department of Surgery, Chang Gung Memorial Hospital, Linkou, Number 5, Fu-Hsing Street, Kweishan, Taoyuan 333, Taiwan.

E-mail address: jylai@cgmh.org.tw (J.-Y. Lai).

<http://dx.doi.org/10.1016/j.pedneo.2016.06.002>

1875-9572/ Copyright © 2016, Taiwan Pediatric Association. Published by Elsevier Taiwan LLC. This is an open access article under the CC BY-NC-ND license (<http://creativecommons.org/licenses/by-nc-nd/4.0/>).

patients with complicated necrotizing pneumonitis may shorten the postoperative course and avoid subsequent surgery.

Copyright © 2016, Taiwan Pediatric Association. Published by Elsevier Taiwan LLC. This is an open access article under the CC BY-NC-ND license (<http://creativecommons.org/licenses/by-nc-nd/4.0/>).

1. Introduction

Although community-acquired pneumonia generally runs a benign course, it can be complicated by empyema, pneumatocele, necrotizing pneumonia (NP), or lung abscess. NP is uncommon in the pediatric population and has a very poor outcome in adults. The incidence of NP has increased in recent years.^{1,2}

When initial medical treatment of acute NP is unsuccessful in pediatric patients, there are no well-established indications for surgical management. The result of surgery is considerably influenced by the extent of necrosis, which determines the extent of pulmonary resection.^{3,4} This study reports the outcomes of surgery for NP in a single institution.

2. Patients and methods

Between January 2002 and December 2010, 134 patients with acute NP were admitted to Chang Gung Memorial Hospital, Linkou, Taiwan. Of these patients, 56 underwent surgery and were included in this retrospective study. The following data were collected for each patient: age, sex, bacterial culture results, surgical technique, number of admission days prior to the surgery, preoperative placement of a chest tube or pigtail catheter, preoperative morbidity, transfusion during surgery, length of postoperative stay (POD), major postoperative complications, and the incidence of reoperation. All patients were followed for >3 years after surgery.

This study was approved by the Ethics Committee of our hospital (Institutional Review Board 99-0744B). The need for written consent was waived because of the retrospective study design.

2.1. Definition of necrotizing pneumonitis

NP was defined as patchy inflammation with microabscesses and decreased perfusion on computed tomography (CT).^{5–7}

The patients were divided into a Complicated NP group (with massive lung necrosis or large cavities involving >50% of the involved lobe) and an Uncomplicated NP group (with less severe CT findings).

2.2. Surgical indications and procedures

Indications for surgery included persistent fever despite aggressive medical treatment (antibiotics, thoracocentesis, pigtail catheterization or chest tube, and fibrinolytic therapy), persistent respiratory distress, and sepsis. Three

types of operations were performed: thoracoscopic decortication (DC) without lung resection, wedge resection (WR), and lobectomy (LB).

All patients received general anesthesia with a single lumen endotracheal tube and were placed in a lateral decubitus position. All 38 DCs and five WRs were thoracoscopically performed. Two 5-mm ports were placed in the midaxillary line in the fifth and seventh intercostal spaces. For DC, pleural fluid was evacuated, and all fibrinous debris and loculations were bluntly removed using forceps under direct thoracoscopic visualization. Samples were submitted for Gram stain and culture. The chest was irrigated, and a large-bore chest tube was positioned under thoracoscopic guidance. For WR, an additional port was placed in the midaxillary line in the third intercostal space. Necrotic lung tissue was completely removed, and the lung abscess was irrigated and evacuated. The lung defect was repaired using interrupted sutures of 2–0 PROLENE (Polypropylene; Ethicon, Cincinnati, OH, USA). Lung re-expansion was confirmed at the conclusion of the procedure.

In nine WRs and all four LBs, posterior thoracotomies were performed. Fibrinous debris and loculations were removed. In open WRs, necrotic lung tissues were completely debrided, lung abscesses were thoroughly irrigated and evacuated, and lung defects were repaired using interrupted sutures with 2–0 PROLENE. In each LB, the bronchus was closed by double ligation using 2–0 PROLENE, and several reinforced stitches were placed distal to the stump. No muscle or pericardial flap was used to cover the stump. A large-bore chest tube was positioned under direct visual guidance.

2.3. Statistical analysis

The mean and standard deviation were calculated for each group, and Student *t* test and analysis of variance were used to detect significant differences between the means, with $p < 0.05$.

3. Results

The 56 patients included 31 (20 men, 11 women) with uncomplicated NP and 25 (12 men, 13 women) with complicated NP. The mean age at presentation was 3.46 ± 1.98 years. There was no significant difference in the mean age of patients undergoing DC, WR, or LB. The sex ratios did not significantly differ between the two groups ($p = 0.22$) or among the three types of surgery ($p = 0.35$). The results are summarized in [Tables 1 and 2](#).

Download English Version:

<https://daneshyari.com/en/article/8813432>

Download Persian Version:

<https://daneshyari.com/article/8813432>

[Daneshyari.com](https://daneshyari.com)