

Rehabilitative management for aspiration pneumonia in elderly patients

Ryo Momosaki MD, PhD, MPH

Department of Rehabilitation Medicine, Teikyo University School of Medicine University Hospital, Mizonokuchi, Kanagawa, Japan

Correspondence

Ryo Momosaki, Department of Rehabilitation Medicine, Teikyo University School of Medicine University Hospital, Mizonokuchi, Kanagawa, Japan.
Email: momosakiryo@gmail.com

Abstract

Aspiration pneumonia is a common disease that frequently occurs in elderly patients. Most patients with aspiration pneumonia have swallowing disability and develop hospital-acquired disability. Frequently, patients have difficulty returning home, and they often require long-term hospitalization. Recently, the effectiveness of rehabilitative management including physical, pulmonary, and dysphagia rehabilitation for aspiration pneumonia was reported. Several studies showed that early rehabilitation was associated with reduced mortality and early hospital discharge after aspiration pneumonia. Unnecessary “nil by mouth” directives associated with aspiration pneumonia at hospital admission resulted in adverse effects, including decline in swallowing ability and prolonged treatment duration. Rehabilitative management combined with appropriate nutrition is recommended to improve clinical outcomes, including physical and swallowing function in geriatric patients with aspiration pneumonia.

KEYWORDS

aspiration pneumonia, dysphagia, mortality, oral intake, rehabilitation

1 | INTRODUCTION

Aspiration pneumonia (AP) is a common, but potentially serious disease that frequently occurs in elderly patients.¹ In Japan, elderly people comprise a high percentage of home-care patients and residents of medical and nursing care facilities. They account for a large proportion of nursing- and healthcare-associated pneumonia (NHCAP) cases and are at high risk of AP. The condition NHCAP was proposed to adapt the concept of healthcare-associated pneumonia to the Japanese medical and nursing care insurance system, and it overlaps to a large extent with AP.² However, the classification of AP, which depends on its etiology, differs from that depends on where the patient acquired the condition. Although, the definition of AP can vary depending on researchers and clinicians,³ the Japanese Respiratory Society Guidelines define AP as pneumonia that develops in patients are whom dysphagia and aspiration is known to occur (or is strongly suspected).²

Geriatric patients with AP often develop hospitalization-associated disability that can lead to physical decline.⁴ Most patients with AP,

particularly the elderly, have dysphagia and difficulty with oral intake⁵ and malnutrition.⁶ Indeed, AP is frequently fatal in such patients. Rehabilitative management including early physical therapy, and pulmonary and dysphagia rehabilitation can potentially improve clinical outcomes of geriatric patients with AP. We review the available literature concerning rehabilitative management for aspiration pneumonia in elderly patients.

2 | METHODS AND RESULTS

2.1 | Search procedure

We searched research articles focusing on patients older than 60 years who had AP (including suspected cases). With respect to rehabilitative management, we included physical, pulmonary, and dysphagia rehabilitation. We searched for relevant articles published until January 2016 using MEDLINE. Combinations of the terms “aspiration pneumonia”, and “rehabilitation” or “oral intake” or “physiotherapy” or

This is an open access article under the terms of the Creative Commons Attribution-NonCommercial License, which permits use, distribution and reproduction in any medium, provided the original work is properly cited and is not used for commercial purposes.

© 2017 The Authors. *Journal of General and Family Medicine* published by John Wiley & Sons Australia, Ltd on behalf of Japan Primary Care Association.

“exercise” or “physical therapy” or “early ambulation”, and “old” or “elderly” or “geriatric” or “aged” were used to search titles and abstracts. We included observational and interventional studies. Non-English-language publications and abstracts were excluded. Using this search process, we found seven relevant articles (Table 1).

2.2 | Physical and pulmonary rehabilitation

Hospital admission is considered a health risk for elderly patients with AP. Bed rest in the acute phase induces muscle loss, mobility decline, and activities of daily living (ADL) decline (hospitalization-associated disability). Hospitalization-associated disability can lead to cognitive disorders, other complications, extension of hospitalization, difficulty in returning home, quality of life decline, and death. Yagi et al. showed that 71% of elderly AP patients with hospitalization-associated disability did not have improved ADL scores during hospitalization.⁷ However, the study showed that early rehabilitation improved ADL significantly (odds ratio, 1.6; 95% confidence interval [CI], 1.5-1.6). Early rehabilitation might prevent ADL decline during hospitalization in patients with AP. Furthermore, Kim et al. showed that hospital-based physical therapy helps to reduce the 30 days hospital readmission rate of acutely ill older adults with pneumonia and declining physical function.⁸

Generally, acute-phase physical rehabilitation programs for elderly patients with AP comprise early mobilization, range-of-motion exercises, self-care exercises, and muscle strength and endurance training, all of which have the potential to decrease posthospital syndrome and hospital-acquired physical deconditioning. In acute rehabilitation, patients with AP are instructed to sit in a wheelchair during the daytime. Standing and gait training are introduced according to the patient's condition. These rehabilitation methods are feasible and effective for almost all geriatric patients with AP, regardless of the severity of pneumonia.⁹

In pulmonary rehabilitation for acute patients with AP, positioning, postural drainage, sputum elimination assistance, respiration training guidance, and range-of-motion exercises of the upper limbs are conducted. These programs have the potential to decrease risk of mortality. We reported that early rehabilitation, including pulmonary rehabilitation for acute patients with AP, was associated with a reduction in 30 days in-hospital mortality using a nationwide administrative database.¹⁰ Our analysis showed that the early rehabilitation group had a significantly lower in-hospital mortality rate (odds ratio, 0.7; 95% CI, 0.6-0.8).

2.3 | Dysphagia rehabilitation

Most elderly patients with AP have dysphagia and difficulty with oral intake. Return to oral intake in patients with AP is influenced by pneumonia severity, ADL, weight, and comorbidities.¹¹ With the rapid increase in the elderly population, a rehabilitative practice model for dysphagia with a trans-disciplinary approach was developed in Japan.¹² Generally, a dysphagia rehabilitation program comprises behavioral modification (eg, positioning for feeding), direct swallowing

TABLE 1 Details of included studies

Authors & year	Study design	Type of pneumonia	Number of participants	Participants' age	Intervention	Outcome measures
Yagi et al. 2016 ⁷	Retrospective	Aspiration pneumonia	112 558	>60	Early rehabilitation, started within 7 d of admission	Barthel Index
Kim et al. 2015 ⁸	Retrospective	Community-acquired pneumonia	1058	>65	Physical rehabilitation	Katz ADL index, 30 d readmission
Chigira et al. 2015 ⁹	Prospective	Community-acquired pneumonia	71	>65	Early physical rehabilitation, started within 2 d of admission	Functional Independence Measure, admission period
Momosaki et al. 2015a ¹⁰	Retrospective	Aspiration pneumonia	68 584	>70	Early physical rehabilitation, started within 3 d of admission	30 d mortality
Momosaki et al. 2015b ¹³	Retrospective	Aspiration pneumonia	98 374	>65	Dysphagia rehabilitation	Total oral intake at discharge
Maeda et al. 2016 ¹⁶	Retrospective	Aspiration pneumonia	331	>65	Early oral intake	Treatment duration, fasting period, nutritional intake, mortality, swallowing ability
Koyama et al. 2015 ¹⁷	Retrospective	Acute pneumonia	370	>65	Early oral intake, within 2 d of admission	Days until discharge with oral intake

exercises (eg, deliberate swallowing, supraglottic swallowing technique), and indirect swallowing exercises (eg, head-raising exercises, and range-of-motion exercises for the neck). We showed that dysphagia rehabilitation increased the proportion of elderly patients with AP able to return to total oral intake on discharge.¹³

Food texture modification methods have been developed in Japan. Texture modification has become one of the most common forms of intervention for dysphagia and is considered important for promoting efficient swallowing.¹⁴ The availability of various modified foods improves the safety of direct swallowing exercises.

Oral care is frequently combined with dysphagia rehabilitation as preparation for oral intake after AP. In hospital, patients with AP are typically nil by mouth. However, nil by mouth after AP leads to worsened oral cavity clearance and poor oral hygiene. Oral care might reduce oral bacteria count, which is associated with pneumonia onset, and may prevent recurrence of pneumonia.¹⁵

Early initiation of oral intake after hospital admission with AP is also recommended. Maeda et al. reported that unnecessary nil per os instruction with AP at hospital admission resulted in adverse effects on patients, including prolonged treatment duration and decline in swallowing ability.¹⁶ Koyama et al. showed that early oral intake was associated with earlier hospital discharge with oral intake in hospitalized elderly adults with pneumonia.¹⁷

2.4 | Rehabilitation nutrition

Almost all geriatric patients with AP have dysphagia and oral intake difficulty and are likely to develop malnutrition. Malnourished older adults admitted to rehabilitation units are likely to be discharged with moderate malnutrition, low physical function, and poor health-related quality of life.¹⁸ Both rehabilitation and nutrition management are important in geriatric AP patients with disability and malnutrition. Specifically, the concept of rehabilitation nutrition as a combination of both rehabilitation and nutrition care management and the International Classification of Functioning, Disability and Health guidelines are used to evaluate nutrition status and to maximize functionality in the elderly and other people with disability.¹⁹ Nutrition status is associated with rehabilitation outcomes in geriatric patients with hospitalization-associated disability.²⁰ The number of days from onset until initiation of rehabilitation (days of inactivity) and nutritional status were shown to be associated with prognosis of disability in geriatric patients with AP.²¹ Dysphagia rehabilitation combined with nutrition therapy was reported to improve prognosis of swallowing function in dysphagic patients.²² Combining rehabilitation with nutritional support is recommended for geriatric patients with AP.

3 | CONCLUSION

For the treatment of geriatric patients with AP, tailored rehabilitative management is important. Rehabilitative management including early physical, pulmonary and dysphagia rehabilitation, and rehabilitation nutrition is beneficial for elderly patients with AP.

CONFLICT OF INTEREST

The authors have stated explicitly that there are no conflicts of interest in connection with this article.

REFERENCES

1. Teramoto S, Yoshida K, Hizawa N. Update on the pathogenesis and management of pneumonia in the elderly-roles of aspiration pneumonia. *Respir Investig*. 2015;53:178–84.
2. Kohno S, Imamura Y, Shindo Y, et al. Clinical practice guidelines for nursing- and healthcare-associated pneumonia (NHCAP) [complete translation]. *Respir Investig*. 2013;51:103–26.
3. Komiya K, Ishii H, Kadota J. Healthcare-associated pneumonia and aspiration pneumonia. *Aging Dis*. 2014;6:27–37.
4. Covinsky KE, Pierluissi E, Johnston CB. Hospitalization-associated disability: "She was probably able to ambulate, but I'm not sure". *JAMA*. 2011;306:1782–93.
5. Manabe T, Teramoto S, Tamiya N, Okochi J, Hizawa N. Risk factors for aspiration pneumonia in older adults. *PLoS One*. 2015;10:e0140060.
6. Sura L, Madhavan A, Carnaby G, Crary MA. Dysphagia in the elderly: management and nutritional considerations. *Clin Interv Aging*. 2012;7:287–98.
7. Yagi M, Yasunaga H, Matsui H, et al. Effect of early rehabilitation on activities of daily living in patients with aspiration pneumonia. *Geriatr Gerontol Int*. 2016;16:1181–7.
8. Kim SJ, Lee JH, Han B, et al. Effects of hospital-based physical therapy on hospital discharge outcomes among hospitalized older adults with community-acquired pneumonia and declining physical function. *Aging Dis*. 2015;6:174–9.
9. Chigira Y, Takai T, Igusa H, Dobashi K. Effects of early physiotherapy with respect to severity of pneumonia of elderly patients admitted to an intensive care unit: a single center study in Japan. *J Phys Ther Sci*. 2015;96:2053–6.
10. Momosaki R, Yasunaga H, Matsui H, Horiguchi H, Fushimi K, Abo M. Effect of early rehabilitation by physical therapists on in-hospital mortality after aspiration pneumonia in the elderly. *Arch Phys Med Rehabil*. 2015;96:205–9.
11. Momosaki R, Yasunaga H, Matsui H, Horiguchi H, Fushimi K, Abo M. Predictive factors for oral intake after aspiration pneumonia in older adults. *Geriatr Gerontol Int*. 2016;16:556–60.
12. González-Fernández M, Huckabee ML, Doeltgen SH, Inamoto Y, Kagaya H, Saitoh E. Dysphagia rehabilitation: similarities and differences in three areas of the world. *Curr Phys Med Rehabil Rep*. 2013;1:296–306.
13. Momosaki R, Yasunaga H, Matsui H, Horiguchi H, Fushimi K, Abo M. Effect of dysphagia rehabilitation on oral intake in elderly patients with aspiration pneumonia. *Geriatr Gerontol Int*. 2015;15:694–9.
14. Cichero JA, Steele C, Duivestijn J, et al. The need for international terminology and definitions for texture-modified foods and thickened liquids used in dysphagia management: foundations of a global initiative. *Curr Phys Med Rehabil Rep*. 2013;1:280–91.
15. Kikutani T, Tamura F, Tashiro H, Yoshida M, Konishi K, Hamada R. Relationship between oral bacteria count and pneumonia onset in elderly nursing home residents. *Geriatr Gerontol Int*. 2015;15:417–21.
16. Maeda K, Koga T, Akagi J. Tentative nil per os leads to poor outcomes in older adults with aspiration pneumonia. *Clin Nutr*. 2016;35:1147–52.
17. Koyama T, Maeda K, Anzai H, Koganei Y, Shamoto H, Wakabayashi H. Early commencement of oral intake and physical function are associated with early hospital discharge with oral intake in hospitalized elderly individuals with pneumonia. *J Am Geriatr Soc*. 2015;63:2183–5.
18. Marshall S, Young A, Bauer J, Isenring E. Malnourished older adults admitted to rehabilitation in rural New South Wales remain malnourished throughout rehabilitation and once discharged back to

- the community: a prospective cohort study. *J Aging Res Clin Pract.* 2015;4:197–204.
19. Wakabayashi H, Sakuma K. Rehabilitation nutrition for sarcopenia with disability: a combination of both rehabilitation and nutrition care management. *J Cachexia Sarcopenia Muscle.* 2014;5:269–77.
 20. Wakabayashi H, Sashika H. Association of nutrition status and rehabilitation outcome in the disuse syndrome: a retrospective cohort study. *Gen Med.* 2011;12:69–74.
 21. Goto R, Watanabe H, Tanaka N, Kanamori T, Yanagi H. Factors associated with recovery of activities of daily living in elderly pneumonia patients. *Gen Med.* 2015;16:68–75.
 22. Iwamoto M, Higashibeppu N, Arioka Y, Nakaya Y. Swallowing rehabilitation with nutrition therapy improves clinical outcome in patients with dysphagia at an acute care hospital. *J Med Invest.* 2014;61:353–60.

How to cite this article: Momosaki R. Rehabilitative management for aspiration pneumonia in elderly patients. *J Gen Fam Med.* 2017;18:12–15. <https://doi.org/10.1002/jgf2.25>