

Intradialytic Aerobic Cycling Exercise on the Improvement of Fatigue in Hemodialysis Patients



Presentors:

14364019 Shen Yuxian

14364020 Xie Yunjuan

14364014 LI Xueyi

CONTENTS



PART 01

Basic Concepts



PART 02

Assessment and Efficiency



PART 03

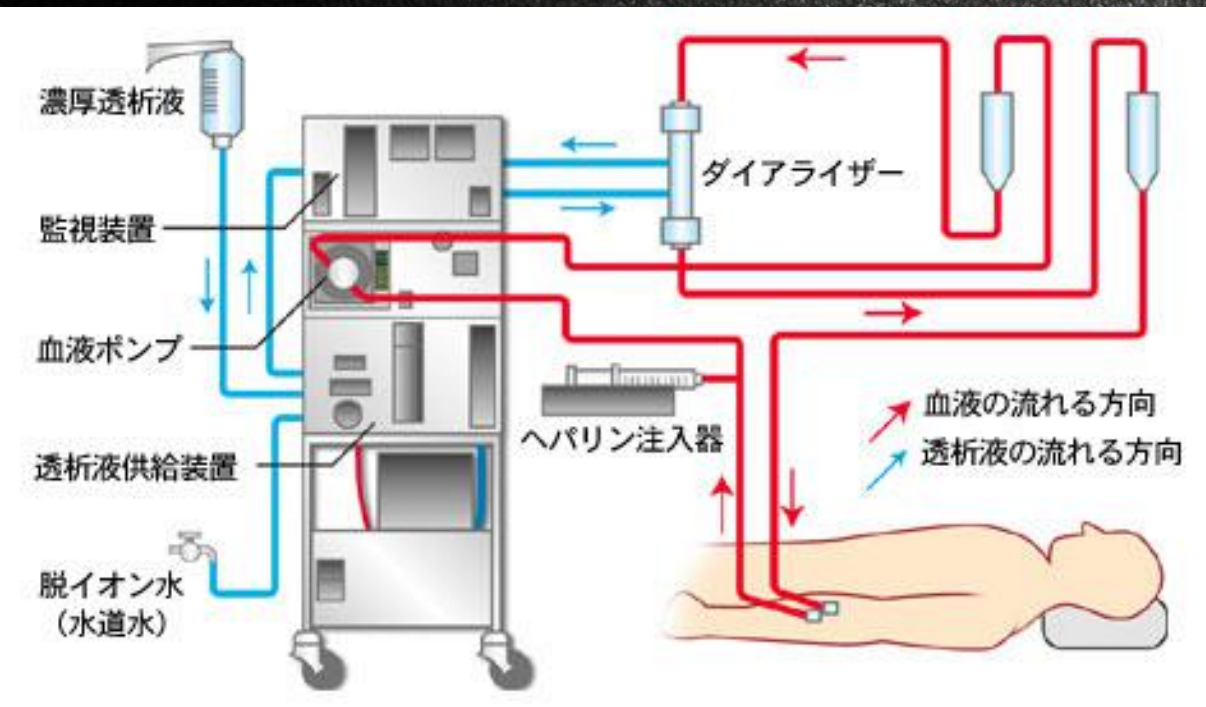
Intradialytic cycling



PART 01

Basic Concepts

➤ Hemodialysis



- ✓ End-stage renal disease patients
- ✓ Eliminate toxin from body
- ✓ Femoral vein Elbow median vein

(Source: www.bling.com)

➤ Dialysis related fatigue



Mental



Anxiety



Depression



Anorexia

(Naini,2016)

➤ Dialysis related fatigue



Physical



Inadequate
nutrient



Inflammatory
factor

(Naini,2016)



Anemia

(Girndt 2010)

➤ Intradialytic exercise

1 Involve no extra time

At the same time
Lower drop-out rate
Greater compliance

2 Under supervision

Detect complications
Treat on the spot

3 Increase solute removal

Increase muscle blood flow
Remove greater toxic agents



(Source: www.motomed.com)



PART 02

Assessment and Efficiency

➤ The benefits of aerobic exercise

- 01 Dialysis efficacy
- 02 Cardiovascular outcomes
- 03 Immune system
- 04 Physical function
- 05 Health-related quality of life

➤ Dialysis efficacy



(Mohseni R.et.al.2013)

↳ Cardiovascular outcomes

Increases maximal oxygen uptake capacity (VO_{2max})



Lower plasma triglycerides (TG)
Improves blood pressure control

(Groussard, C., et al.2015)



Resting diastolic and systolic blood pressure

Decreases arterial stiffness

(Kouidi EJ.et.al..2009)



Immune system



Reduces high-sensitivity C-reactive protein (hs-CRP) levels

Reduce interleukin-6 (IL-6) levels

Reduce F2-isoprostanes (F2-IsoP)

(Afshar R.et.al.2010)



Increase serum albumin levels
血清白蛋白水平

Increase the number of cells positive for CD133, CD34

(Liao, M. T., et al.2016)



Physical function

The 6-minute
walk test
(6MWT)

The body
mass index

(Pellizzaro CO.et.al.2013)

➤ Health-related quality of life

Physical and mental component dimensions of the short-form 36 health questionnaire (SF-36)

(Song WJ.et.al.2012)



PART 03

Intradialytic cycling



Video MOTOmed



(Source: www.motomed.com)

Details



- ★ Start during the first 2 hours
- ★ 30 min = 5 + 20 + 5



- ★ Moderate: 12-15
- Borg perceived Exertion Scale

(Min-Tser Liao, 2016)



- ★ 3 times per week
- ★ > 8 weeks

(Chung YC, 2016)

➤ Precaution



1. Under the supervision of a physician and a nurse



2. The blood pressure was measured every 15 minutes

➤ Precaution

3. Do weekly rounds to follow up with each patient once a week.

4. Encourage and motivate the patients during each HD treatment if safe .



(Kristen parker,2016)

(Source: www.motomed.com)

➤ Contraindication

Unstable cardiac status

Physical limitations

Poor blood sugar control

Active infection or illness



Keynote



Safe and beneficial for the ESRD patients



Suggest to do intradialytic exercise (MOTOmed)



Reference

- 【1】 Afsoon Emami Naini, Alireza Karbalie :Comparison of malnutrition in hemodialysis and peritoneal dialysis patients and its relationship with echocardiographic findings [J] Res Med Sci 2016 21.78
- 【2】 Matthias Girndt, Eric Seibert: Premature cardiovascular disease in chronic renal failure (CRF): A model for an advanced ageing process [J] Experimental Gerontology 45 (2010) 797–800
- 【3】 Liao, M. T., et al. Intradialytic aerobic cycling exercise alleviates inflammation and improves endothelial progenitor cell count and bone density in hemodialysis patients. Medicine (Baltimore) 2016; 95(27): e4134.
- 【4】 Sheng, K., et al. "Intradialytic exercise in hemodialysis patients: a systematic review and meta-analysis." Am J Nephrol 2014; 40(5): 478-490.
- 【5】 Groussard, C., et al. "Beneficial effects of an intradialytic cycling training program in patients with end-stage kidney disease." Appl Physiol Nutr Metab2015; 40(6): 550-556.
- 【6】 Mohseni R, Emami Zeydi A, Ilali E, et al. The effect of intradialytic aerobic exercise on dialysis efficacy in hemodialysis patients: a randomized controlled trial. Oman Med J 2013; 28:345–349.
- 【7】 Kouidi EJ, Grekas DM, Deligiannis AP. Effects of exercise training on noninvasive cardiac measures in patients undergoing long-term hemodialysis: a randomized controlled trial. Am J Kidney Dis 2009; 54:511–521.

【8】 Song WJ, Sohng KY. Effects of progressive resistance training on body composition, physical fitness and quality of life of patients on hemodialysis. *J Korean Acad Nurs* 2012; 42:947–956.

【9】 Pellizzaro CO, Thome FS, Veronese FV. Effect of peripheral and respiratory muscle training on the functional capacity of hemodialysis patients. *Ren Fail* 2013; 35:189–197.

【10】 Afshar R, Shegarfy L, Shavandi N, et al. Effects of aerobic exercise and resistance training on lipid profiles and inflammation status in patients on maintenance hemodialysis. *Indian J Nephrol* 2010; 20:185–189.

【11】 Liao, M. T., Liu, W. C., Lin, F. H., Huang, C. F., Chen, S. Y., Liu, C. C., . . . Wu, C. C. (2016). Intradialytic aerobic cycling exercise alleviates inflammation and improves endothelial progenitor cell count and bone density in hemodialysis patients. *Medicine (Baltimore)*, 95(27), e4134. doi: 10.1097/MD.00000000000004134

【12】] Moore GE, Painter PL, Brinker KR, Stray-Gundersen J, Mitchell].7–136:13;8991 siD yendiK J mA .sisylaidomeah. Cardiovascular response to submaximal stationary cycling during

【13】 Chung, Y. C., Yeh, M. L., & Liu, Y. M. (2016). Effects of Intradialytic Exercise on the Physical Function, Depression, and Quality of Life for Hemodialysis Patients: A Systematic Review and Meta-analysis of Randomized Controlled Trials. *J Clin Nurs*. doi: 10.1111/jocn.13514

THE END

THANKS