

Case Report

Chronic Kidney Disease in Hospital CooksRita I. Wijaya,¹ Dewi S. Soemarmo^{2,3*}¹Occupational Medicine Specialist Program, ²Department of Community Medicine,³Occupational and Environmental Health Research Cluster, IMERI

Faculty of Medicine Universitas Indonesia, Jakarta

*Corresponding author: dewisoemarmo@yahoo.com

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<https://doi.org/10.23886/ejki.10.125.271>**Abstract**

Chronic kidney disease is still a concerning health problem in Indonesia. Complications of chronic kidney disease include hypertension, cardiovascular disease, decreased kidney function to the end stage and even death. One of the potential dangers is heat, which not only causes the risk of kidney and cardiovascular health problems but can also worsen the condition of the disease. Workplace, such as hospital kitchen, have a risk of heat exposure. This article shows the importance of fit-to-work assessment based on occupational medicine management. A 55-year-old cook worker with stage IV chronic kidney disease came to the hospital. The result from her last visit suggested that she had dyslipidemia and uncontrolled hypertension. We recommend the worker with job restrictions. She can still work in the nutrition department of the hospital but with restrictions on cooking duties. She can still work in the food filter and serving area. The goal of limiting work assignments is to maintain chronic kidney failure at stage IV. In addition, the hospital is also required to take control measures so that other workers do not have the risk of kidney disease health problems.

Keywords: chronic kidney disease, cook, occupational medicine management.

Gagal Ginjal Kronis pada Pekerja Juru Masak**Abstrak**

Gagal ginjal kronis masih menjadi perhatian masalah kesehatan di Indonesia. Komplikasi gagal ginjal kronis seperti hipertensi, penyakit kardiovaskuler, penurunan fungsi ginjal sampai ke stadium akhir dan bahkan kematian. Salah satu bahaya potensial yaitu panas, tidak hanya menyebabkan risiko gangguan kesehatan di ginjal dan kardiovaskuler tetapi juga dapat memperburuk kondisi penyakit tersebut. Tempat kerja seperti dapur rumah sakit memiliki risiko pajanan panas. Kasus ini menunjukkan pentingnya penilaian kelaikan kerja berbasis manajemen kedokteran okupasi. Pekerja juru masak usia 55 tahun dengan gagal ginjal kronis stadium IV. Dari hasil kunjungan terakhir, didapatkan dislipidemia dan hipertensi belum terkontrol. Kami merekomendasikan pekerja dengan pembatasan tugas. Pasien masih dapat bekerja di departemen gizi rumah sakit tetapi terdapat pembatasan pada tugas memasak. Pekerja masih dapat bekerja di area penyaringan makanan dan penyajian. Tujuan pembatasan tugas kerja untuk dapat mempertahankan gagal ginjal kronis pekerja berada tetap di stadium IV. Selain itu, pihak rumah sakit juga diharuskan melakukan upaya-upaya pengendalian agar pekerja lainnya tidak memiliki risiko gangguan kesehatan penyakit ginjal.

Kata kunci: gagal ginjal kronis, juru masak, manajemen kedokteran okupasi.

Introduction

Chronic kidney disease, formerly known as chronic kidney failure, is still a concerning health problem in Indonesia. According to the 2018 Basic Health Research Data, the prevalence of chronic kidney disease in Indonesia in the productive age had reached 18.44 per mile. This means that 18-19 out of 1000 people in Indonesia have chronic kidney disease.¹ Chronic kidney disease is defined as abnormalities of kidney structure or function, present for more than three months, with implications for health. Chronic kidney disease is classified based on cause, GFR (glomerular filtration rate) category and albuminuria category, abbreviated as CGA.²

Complications of chronic kidney disease such as cardiovascular disease, hypertension, decreased renal function can cause end-stage renal failure requiring kidney replacement therapy and even death.³ Cardiovascular disease has known to be the leading cause of death in patients with chronic renal failure, and the risk increases with decreasing kidney function.³ In addition to being commonly found in patients with chronic kidney disease, the cardiovascular disease itself also affects the blood vessel system. On the other hand, hypertension is not only an effect of cardiovascular disease, but it is also a development of chronic kidney disease.⁴ Hypertension itself is often found in the early stages up to stage IV of chronic kidney disease and the prevalence of hypertension increases as kidney function declines.³

In patients with chronic kidney disease, we should not only pay attention to the complications which may result from chronic kidney disease. But, we also need to pay attention to the environment that can worsen the condition of chronic kidney disease, such as potential hazards in the workplace. One of the potential hazards in the workplace is heat. Exposure to heat is not only increasing the risk of chronic kidney disease, but it is increasing the severity of chronic kidney disease, as well.⁵⁻⁷ Types of work such as cooking have risks as a result of heat exposure. In addition to heat exposure, the kitchen area has high humidity due to the hot steam generated from the cooking and the heat generated in the body from activities during cooking.^{5,8,9} Therefore, we report this case to describe the fit-to-work assessment with occupational medicine management in a cooking worker with chronic kidney disease.

Case Description

A 55-year-old female cook has been diagnosed with stage IV chronic kidney disease since 2017.

In 2017, an ultrasound examination of the kidneys and bladder showed the impression of bilateral chronic renal parenchymal disease. Currently, she has no complaints. She denied any complaints in the forms of fatigue, shortness of breath, nausea, vomiting, diarrhea, or itching on the skin. She denied having any history of hypertension, heart disease, and diabetes. She also denied having any family history of hypertension, heart disease, and diabetes. On physical examination, the blood pressure was 151/76 mmHg, and the body mass index was 26.49 kg/m². Laboratory results suggested LDL cholesterol levels of 153 mg/dL, triglycerides 209 mg/dL, blood urea 62 mg/dL, blood creatinine 2.7 mg/dL and eGFR 19.1 mL/min/1.73m². The patient received candesartan 1x 80 mg, sodium bicarbonate 3x500 mg, folic acid 2x1 mg, and fenofibrate 1x300 mg therapy.

The patient has been working as a cook in the nutrition service installation of Hospital X since 2014. The workspace in the kitchen of the nutrition service installation has nine stoves, five boiling, two rice cookers, and two stumps, all of which use central gas. There are exhausts available at some points in the kitchen. When she works in the morning shift, she serves in the vegetable and side dish cooking section, while when she works in the afternoon shift, she serves in the section of filtering and serving.

When the patient is working in the cooking section, she looks at today's menu schedule (morning and afternoon) and brings a cart from the warehouse administration area to the refrigerator and warehouse room. The food taken from the refrigerator is the side dishes that have been seasoned the previous day. In the morning, the food will be processed with either being fried, steamed, or boiled, according to the menu. When the patient is in charge of cooking vegetables, she first waits for the vegetables prepared by the vegetable cutting section delivered to the kitchen. Afterward, she cooks the vegetable according to the menu. Vegetables are cooked in the form of fresh/impromptu. While waiting for the vegetables, the patient prepares the necessary cooking utensils. After the utensils and materials are ready, the patient cooks for breakfast and lunch, then continue to prepares side dishes for the following day, according to the data provided by the nutrition officer at the work unit. It includes preparing, cutting, peeling, and grinding the spice. The patient also carries out an inventory of groceries or make a shopping list and calculate the food needs for the following day.

When the patient is working in the section of filtering and serving, she makes marrow porridge, soude food, juice, and filtered food. She looks at today's menu schedule (morning and afternoon) and brings a cart in the warehouse administration area to the refrigerator and warehouse room to prepare food ingredients (milk, eggs, coconut milk, shredded chicken). Afterward, she calculates the formulas and checks soude needs for the following day. The patient also takes the vegetables already cooked in the vegetable section to be blended. After that, she does of the soude needs according to the dose (calories/cc), prepares the label (cutting, writing, and sticking it), and finally, proceeds with cleaning and tidying up the equipment.

The patient's work environment has never been measured for its temperature. However, the patient admitted that she had always sweated a lot while working because of the heat. Nevertheless, the uniform she used was still able to absorb the sweats. The patient also admitted to drinking frequently, but she did not count how much water or how many times she refilled her drinking bottle while working. The patient also realized that when she worked, she had never gone to the toilet to urinate and had never paid attention to the color of the urine. When the patient cooks for the morning shift, she can not take a short break during working hours. The patient can rest after the working hour is over. The working area for cooking, filtering, and serving are in separate rooms from one another. The PPE (personal protective equipment) worn during work are a mask, a cap, plastic gloves, and an apron.

The management of occupational medicine for the fit-to-work assessment of a cook with stage IV chronic kidney disease is the need to restrict the given task where the patient should not perform cooking tasks that are exposed directly to a heat source continuously. The patient can work in the filtering and serving areas in the morning and afternoon shifts. Modification of the workplace is also carried out by providing water dispensers and bottles of drinking water, providing toilets, installing flyers for urine color turbidity, making MERP (medical emergency response plan), measuring and assessing the work environment climate as well as exhaust reassessment and providing medical check-up for the workers.

Discussion

When a person is exposed to heat, the human body prevents an increase in body temperature by dissipating heat through transferring heat to the blood which carried by the blood stream to the

capillary network located under the skin where the blood is cooled by the ambient air temperature.¹⁰ It is also known as dry heat loss (radiation and convection).^{5,10} In addition, there is also heat loss through evaporation (sweat). However, this effort will be hampered if the humidity in the surrounding environment is high.^{5,10,11}

The condition of a person's body that can not prevent the increase of body temperature can cause dehydration and an increase in blood viscosity, thereby increasing the burden on the heart and potentially triggering myocardial ischemia.^{10,12} An increase in core temperature can also trigger a homeostatic systemic inflammatory response that ultimately results in endothelial dysfunction and direct cytotoxic effects and can trigger acute coronary syndromes.¹² On the other hand, short-term heat exposure of about 0-5 hours can affect systolic and diastolic blood pressure.¹³ In the end, the unmanaged hydration status will result in urine volume decrease, then the blood perfusion changes, which can cause kidney damage and chronic kidney disease.^{5,9} Meanwhile, in someone who already has chronic kidney disease, this situation can cause end-stage kidney disease.¹⁴

Fit-to-work assessment with occupational medicine management needs to be carried out because workers spend a lot of time in the workplace. The assessment of fit-to-work aims to ensure that the workers can work effectively without risking themselves or their co-workers.¹⁵ This worker was diagnosed with stage IV chronic kidney disease with dyslipidemia and uncontrolled hypertension. Dyslipidemia and uncontrolled hypertension are not only risks for cardiovascular disease, but also affect the development of chronic kidney disease in workers.^{4,16} However, it should be noted that it is not only the complications of chronic kidney disease that affect the cardiovascular system and increase the risk of worsening chronic kidney disease but also heat exposure in the workplace. Although the temperature and humidity in the work environment have not been measured, based on the patient's history, she stated that they sweated a lot and drank a lot but did not go to the toilet during working hours. In this condition, we recommend that the worker should not be on duty to cook where the work can cause the worker to be exposed directly to heat sources. The worker should be assigned to serving and filtering areas according to other duties and responsibilities. This is due to maintaining the current condition of the worker so that it will not fall into the next stage, namely end-stage kidney disease.

The treatment and management prescribed by the internist are still continued, and the worker is given the opportunity to do routine controls with the doctors.

In addition to the recommendations given above, the hospital is expected to (1) provide drinking water dispensers and drinking water bottles in the kitchen area; (2) provide adequate toilets for workers in one work shift;¹⁷ (3) make and paste flyers of urine color turbidity on the bathroom door so that the workers can do a self-assessment of their dehydration status; (4) provide education and training for other kitchen workers regarding the first treatment in medical emergencies such as syncope and myocardial infarction, (5) conduct an assessment of the working environment climate at least once a year or when new cooking utensils are available;¹⁷ (6) assess the number and the location of exhausts and maintain the exhausts periodically at least every six months; (7) Health examination based on HRA (health risk assessment) includes laboratory examination of kidney function and electrocardiography in pre-duty condition, periodically and at the end of duty.¹⁸ The management also aims to prevent health problems risks arising from heat exposure to all workers in the kitchen area.

Conclusion

The management of the worker with chronic kidney disease is not limited to medical aspects but must consider if any occupational factors can worsen the condition of chronic kidney disease suffered. For those who works in the cooking area, the potential hazard of heat exposure can worsen the condition of stage IV chronic kidney disease to end-stage kidney disease. Moreover, the risk of cardiovascular disease will increase, not only due to the heat exposure, but also as a complication from chronic kidney disease, as well.

Fit-to-work assessment with occupational medicine management is critical to maintaining the current health condition of cook workers. The given recommendation is a restriction in the cooking section, with the worker can still work in the filtering and serving area. In addition to this recommendation, the hospital also should conduct preventive measures towards health problems risks due to heat exposure.

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