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Original article

Early mortality in patients with chronic kidney disease who started emergency haemodialysis in a Peruvian population: Incidence and risk factors☆

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ABSTRACT

Objectives: To estimate early mortality in patients with chronic kidney disease who started emergency haemodialysis between 2012 and 2014 in a national referral hospital in Lima, Peru, and to identify risk factors.

Design, characteristics, participants and measurements: A retrospective cohort study was conducted by reviewing the medical records of all patients admitted to the hospital's Haemodialysis Unit from 2012 to 2014. Early mortality, defined as death within the first 90 days of starting haemodialysis, as well as age, gender, chronic kidney disease aetiology, comorbidities, cause of death, estimated glomerular filtration rate, vascular access and other variables were evaluated in patients who initiated emergency haemodialysis. Early mortality was estimated using frequencies, and risk factors were determined by Poisson regression with robust variance.

Results: 43.4% of patients were female, 51.5% were aged ≥65 years and the early mortality rate was 9.3%. The main risk factors were estimated glomerular filtration rate >10 mL/min/1.73 m^2 (RR: 2.72 [95% CI: 1.60–4.61]); age ≥65 years (RR: 2.51 [95% CI: 1.41–4.48]); central venous catheter infection, RR: 2.25 (95% CI: 1.08–4.67); female gender, RR: 2.15 (95% CI: 1.29–3.58); and albumin < 3.5 g/dL (RR: 1.97 [95% CI: 1.01–3.82]).

Conclusions: Early mortality was 9.3%. The main risk factor was starting haemodialysis with an estimated glomerular filtration rate >10 mL/min/1.73 m^2.

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Mortalidad precoz en pacientes con enfermedad renal crónica que inician hemodiálisis por urgencia en una población peruana: Incidencia y factores de riesgo

Palabras clave:
Diálisis renal
Mortalidad
Enfermedad renal crónica

RESUMEN

Objetivos: Estimar la mortalidad precoz en pacientes con enfermedad renal crónica que iniciaron hemodiálisis por urgencia entre los años 2012-2014 en un hospital de referencia nacional en Lima, Perú, e identificar los factores de riesgo.

Diseño, características, participantes y mediciones: Se estudió una cohorte retrospectiva mediante la revisión de historias clínicas de todos los pacientes admitidos a la Unidad de Hemodiálisis del hospital en el periodo de tiempo señalado. Se evaluó mortalidad precoz, definida como la muerte dentro de los primeros 90 días luego de iniciar hemodiálisis, así como edad, sexo, etiología de enfermedad renal crónica, comorbilidades, causa de muerte, tasa de filtración glomerular estimada, acceso vascular, entre otras variables, en los pacientes que iniciaron hemodiálisis por urgencia. Se estimó la mortalidad precoz mediante frecuencias y se utilizó regresión de Poisson con varianza robusta para determinar los factores de riesgo.

Resultados: Se encontró que el 43,4% fueron mujeres, el 51,5% tenían ≥ 65 años y una mortalidad precoz del 9,3%. Los principales factores de riesgo fueron tasa de filtración glomerular estimada > 10 mL/min/1,73 m^2 (RR: 2,72 [IC 95%: 1,60-4,61]); edad ≥ 65 años (RR: 2,51 [IC 95%: 1,41-4,48]); infección de catéter venoso central, RR: 2,25 (IC 95%: 1,08–4,67); sexo femenino, RR: 2,15 (IC 95%: 1,29–3,58); y albúmina < 3,5 g/dL (RR: 1,97 [IC 95%: 1,01–3,82]).

Conclusiones: La mortalidad precoz fue del 9,3%. El principal factor de riesgo fue iniciar hemodiálisis con una tasa de filtración glomerular estimada > 10 mL/min/1,73 m^2.

Introduction

Chronic kidney disease (CKD) is a major health problem worldwide. In some countries, it affects up to 8.1% of the total population.[1] The number of new cases, and the use of renal replacement therapies (RRTs), has increased in recent years, but not in equal proportion.[2,3] It is estimated that, by 2030, the number of patients starting some form of RRT globally will be more than double with respect to 2010, reaching up to 5.5 million people.[2] In Latin America, the prevalence of patients with stage 5 CKD undergoing some form of RRT increased from 119 patients per million population (pmp) in 1991 to 660 patients pmp in 2010. Here, haemodialysis continues to be the most commonly used form of RRT compared to the other therapies (75% of patients).[4] It has been calculated that, in Peru, between 20,000 and 40,000 patients need some form of RRT.[5] However, according to the Analysis of the CKD situation in Peru for 2015, 415 patients pmp received some form of RRT. The Peruvian Social Security System (EsSalud) provides some form of RRT to 78.5% of these patients, unlike the Ministry of Health (MINSA), which only covers 5.3%.[6] The most recent report from the United States Renal Data System (USRDS) for 2014 revealed an annual mortality rate in patients with CKD of approximately 14%.[7] The majority of studies evaluating the annual mortality rate of patients with CKD undergoing haemodialysis do not include the first 90 days after starting therapy, since it is considered to be associated with haemodialysis itself and with the natural progression of the illness that caused it.[8] Since 2013, the USRDS has included the first 90 days in its mortality studies in order to also evaluate the incidence in this time interval.[9,10] Many studies have defined death occurring within this period of time as "early mortality".[11–14] In the last report from 2014, a significant peak in mortality was observed (8.6%) between the second and third months after starting haemodialysis.[7] Others have reported an early mortality rate ranging between 4 and 12%, similar to the latest report from the USRDS.[11–14] Among the risk factors for early mortality, Ortega et al.[15] identified the starting of emergency dialysis, temporary catheter infection and serum albumin <3.5 g/dL. McQuillan et al. found that the patient's nutritional status, the pre-dialysis nephrology care and the type of vascular access used at the start of haemodialysis represented modifiable factors that could prevent early mortality.[14] Peruvian studies did not find significant differences on evaluating factors associated with early mortality.[16] Some of the most common causes included those of cardiovascular origin (34.2%), such as acute myocardial infarction, and cerebrovascular accident (stroke) and sepsis (13.8%).[14] In view of the above, and considering that previous studies in the country have included a small number of participants, the early mortality of patients with CKD who started emergency haemodialysis is currently a topic of interest in the management of pre-dialysis patients.

Methodology

A retrospective cohort was studied by evaluating the medical histories of patients who were admitted on an emergency basis to the Haemodialysis Unit of the Hospital Nacional