Original Article

Pain in Maintenance Hemodialysis Patients: A Multicenter Study

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Abstract

Context. Pain is a common complaint in maintenance hemodialysis (MHD) patients yet is often inadequately assessed and undertreated.

Objectives. The objective of this study was to evaluate the prevalence, characteristics, intensity, and impact of pain in MHD patients.

Methods. In a cross-sectional study conducted between 2013 and 2015, 336 MHD patients from five hemodialysis units in hospitals owned by Clalit were interviewed and evaluated. Study tools included the Brief Pain Inventory, The Leeds Assessment of Neuropathic Symptoms and Signs Pain Scale, and demographic and clinical characteristics. In addition, computerized pharmaceutical data were reviewed.

Results. Pain was experienced by 82% of the study population (mean pain level: 7.2 ± 2.2) in the 24-hour period before the interview, while 61.5% experienced neuropathic pain characteristics. Of patients with pain, two-thirds reported being regularly treated with pain medications, while 24.5% received nondrug pain treatment. Mean pain relief due to Brief Pain Inventory was 62.5 ± 30%. In multivariate analysis, female gender, a high comorbidity index, and time on dialysis >24 months were associated with the presence of significant pain in the previous 24 hours. In addition, severe pain report was associated with female gender, depression, ≥4 painful sites, and unemployment. Finally, neuropathic pain was associated with time on dialysis >24 months, depression, ≥4 painful sites, and current intensity of pain >2.

Conclusion. Pain is common in MHD patients and is significantly associated with female gender, comorbidity, time on dialysis, and depression. Results of this study may serve as a starting point for palliative interventions for MHD patients. J Pain Symptom Manage 2018;■:■−■.

Key Words
Pain, neuropathic pain, symptoms, maintenance hemodialysis, palliative care

Introduction

Israel's Health Insurance Law of 1994 ensures universal health coverage, including dialysis services, for all Israeli citizens. As of December 2015, 6434 patients had received dialysis, of whom 6019 (93.5%) underwent hemodialysis. Of the latter, 3029 (50.3%) were treated in hospital hemodialysis units.[1] Patients undergoing hemodialysis frequently reported pain arising from multifactorial causes or not experienced as a direct result of the treatment. Approximately 50% of patients undergoing hemodialysis reported some kind of pain[2] that may be nociceptive, neuropathic, somatic, or visceral in nature.[3] While neuropathic pain occurs in 3% to 17% of the general population,[4] it was found to be prevalent in 50%−90% of dialysis patients.[5–10] Furthermore, comorbid conditions such as ischemic peripheral artery disease, diabetic

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neuropathy, osteopenia/osteoporosis (due to long-standing hypertension, diabetes, or old age) result in various types of pain experienced by patients undergoing maintenance hemodialysis (MHD). Similarly, primary kidney disease (e.g., autosomal-dominant polycystic kidney disease) and procedures such as hemodialysis or peritoneal dialysis are common causes of pain.[3,9,11]

The aim of this study was to evaluate the prevalence, intensity, and impact of pain in patients undergoing MHD, and the subsequent relationships of these factors with age, dialysis vintage (time on dialysis), comorbidities, depression, physical function, quality of life, and health services utilization.

Methods

This study describes a multicenter, cross-sectional study of patients undergoing MHD in five hemodialysis units in hospitals owned by Clalit, with 14 hospitals and 4.5 million enrollees, the largest health care provider organization in Israel. During the study period (2013–2015), 10 hemodialysis units operated in Clalit's hospitals. All of them were asked to participate, and five units, representing a wide geographic spread, agreed. A total of 744 patients underwent MHD during the study period in those five units; of these, 450 met the inclusion criteria: adult (>18 years) Hebrew-speaking Clalit enrollees, treated within those units. Of those eligible, 336 patients agreed to take part in the study, signed an informed consent form, and were found to be cognitively competent and capable of completing study questionnaires in Hebrew (75% recruitment rate). Exclusion criteria were hospitalization at the time of interview, a diagnosis of cognitive impairment or abnormal results (>26) in the Montreal Cognitive Assessment (MoCA) (see below), refusal to participate, or withdrawal from the study before completion of questionnaires. This study was approved by the institutional review board of each participating hospital.

The present study used various tools that were first translated into Hebrew using the double back-translation method and then validated, including the following:

The MoCA is a 10-minute cognitive screening tool used to assist first-line clinicians in the detection of mild cognitive impairment. It is a one-page 30-point test that assesses several cognitive domains, including short-term memory, visuospatial abilities, multiple aspects of executive functions, attention, concentration, working memory, language, and orientation to time and place. MoCA scores range between 0 and 30. A score of 26 or more is considered to be normal.[12] It was found to be highly sensitive in identifying mild cognitive impairment and dementia (83% and 94%, respectively).[13]

The Brief Pain Inventory (BPI)[14] assesses both pain intensity (i.e., the sensory dimension) and the interference caused by pain in a patient's life (i.e., the reactive dimension) over the past 24-hour period. Pain intensity is evaluated by four measures: "worst," "least," "average," and "now," or current pain, while pain interference, for our purposes, the Life Impact Index (LII), is measured by the arithmetic mean of the seven interference items. BPI has been previously found to have high reliability.[14]

The Leeds Assessment of Neuropathic Symptoms and Signs Pain Scale (S-LANSS),[15] used for assessing neuropathic pain, is a simple and valid seven-item tool. Each item requires a yes/no response to the presence of five symptoms and two clinical signs. Signs were based on self-report, and when patients were unable to assess their presence, they were assessed by the first author (T. T. F.). Patients scoring 12 or higher are diagnosed with neuropathic pain. The S-LANSS has a Cronbach's alpha of 0.76 when completed unaided, that rises to 0.81 when completed at interview.[16] This tool was used only for patients with current pain lasting more than 24 hours ($n = 218$).

The Mini-International Neuropsychiatric Interview is a diagnostic interview jointly developed by psychiatrists and clinicians, for DSM-IV and ICD-10 psychiatric disorders. With an administration time of approximately 15 minutes, it was designed to meet the need for a short yet accurate, structured psychiatric interview to be used as a first step in outcome tracking in multicenter clinical trials and epidemiology studies. Cohen's kappa values for most psychiatric diagnoses with previously established tools were 0.70 or higher.[17,18]

The Kidney Disease Quality of Life Short Form (KDQOL-SF™), a questionnaire for measuring quality of life in MHD patients, the 36-item Short Form Health Survey at its generic core, is a multidimensional, reliable, and validated instrument specifically designed for dialysis patients.[10,19] The KDQOL-SF is supplemented with multi-item scales that target specific concerns of dialysis patients and is considered to be a valid marker of outcome for chronic dialysis therapy.[20]

In addition, we used two tools for measuring daily function. The Functional Independence Measure,[21] an 18-item ordinal measure of disability that includes 13 motor items and five cognitive items, is one of the most commonly used outcome measures in rehabilitation.[22,23] The Karnofsky Performance Status Scale[24,25] is a physician-applied rating scale that guarantees an objective assessment of a patient's clinical state. The scale ranges from a score of 0 (at death) to 100, which implies full-functional capability to carry out normal daily activities without clinical evidence of