An Unusual Case of Anterior Abdominal wall Dialysate Leak Diagnosed with Tc99m-Sulfur Colloid Single-Photon Emission Computed Tomography/Computed Tomography Peritoneal Scintigraphy

Abstract
Peritoneal dialysis (PD) was commonly used renal replacement therapy for treating end-stage renal failure patients leading to various infectious and mechanical complications. We present a case of a 50-year-old female patient who presented with reduced dialysate return and abdominal wall edema following continuous ambulatory PD. Peritoneal scintigraphy done on suspicion of dialysate leak shows tracer accumulation in the anterior abdominal wall below the insertion of the peritoneal catheter.

Keywords: Anterior abdominal wall, dialysate leak, peritoneal scintigraphy

A 50-year-old female patient who is a known case of chronic glomerulonephritis with end-stage renal failure was on continuous ambulatory peritoneal dialysis (CAPD) for 5 years. She presented to our department with ultrafiltration failure (difference between drained and instilled volumes <400 ml after 4 h stay of dialysate in the peritoneal cavity) and progressively increasing lower anterior abdominal wall edema for 3 months. On physical examination, she does not have tenderness over the anterior abdominal wall. Dialysate effluent shows clear fluid with 3–5 leukocytes/mm³ excluding the presence of peritonitis. Peritoneal scintigraphy was then considered to rule out dialysate leak [Figure 1].

5 mCi of Tc99m-sulfur colloid was instilled into 2 l dialysate bag, and dialysate was infused into the peritoneal cavity after shaking the bag. Planar 3-min static images acquired 20 min following instillation of radiolabelled dialysate showed a focus of increased tracer accumulation in the left paramedian lower anterior abdominal wall [Figure 1a-c]. Single-photon emission computed tomography/computed tomography (SPECT/CT) images localize the tracer accumulation to hypodense collection in the left paraumbilical region of the lower anterior abdominal wall below the insertion of peritoneal catheter [Figure 1g-i]. Subcutaneous stranding was also noted in the lower anterior abdominal wall below the level of collection probably due to slow seeping of dialysate from the collection along the subcutaneous plane [Figure 1h and i]. Based on image findings, dialysate leak from catheter tunnel site was suspected. Surgical re-implantation of catheter resulted in resolution of abdominal edema and increase in ultrafiltration volume. CAPD is a form of renal replacement therapy increasingly done in end-stage renal failure patients because it is less costly and easily performed in home compared to hemodialysis. However, it leads to various complications such as bacterial peritonitis, tubercular peritonitis, catheter exit-site infections, dialysate leaks, hernias, and sclerosing peritonitis, with bacterial peritonitis being the most common complication. Dialysate leaks represent one of the major noninfectious reversible causes of ultrafiltration failure and were estimated to occur in more than 5% of CAPD patients. Occult catheter tunnel site infections, increased intra-abdominal pressure, and prior abdominal wall surgery were usual predisposing factors for anterior abdominal wall dialysate leaks. CT peritoneography was routinely done to diagnose dialysate leaks due to its wide availability, but peritoneal...
Prasad, et al.: Abdominal wall dialysate leak diagnosed by peritoneal scintigraphy

Indian Journal of Nuclear Medicine | Volume 35 | Issue 4 | October-December 2020 371

...scintigraphy with SPECT/CT imaging has more sensitivity in detecting minimal leaks and site of leak.[6] Furthermore, peritoneal scintigraphy is associated with less radiation exposure compared to CT peritoneography and eliminates the possible risk of iodinated contrast media allergy. Various published case reports established the role of peritoneal scintigraphy in diagnosing peritoneo-pleural leak, peritoneo-scrotal leak, and peritoneo-processus vaginalis leak.[7,8] This index case describes the SPECT/CT image findings of anterior abdominal wall dialysate leak. Image findings in this case support the use of peritoneal scintigraphy with SPECT/CT imaging for early diagnosis and surgical correction of this less commonly seen anterior abdominal wall dialysate leak following CAPD.

Declaration of patient consent
The authors certify that they have obtained all appropriate patient consent forms. In the form the patient(s) has/have given his/her/their consent for his/her/their images and other clinical information to be reported in the journal. The patients understand that their names and initials will not be published and due efforts will be made to conceal their identity, but anonymity cannot be guaranteed.

Financial support and sponsorship
Nil.

Conflicts of interest
There are no conflicts of interest.

References
1. Giannattasio M, Buemi M, Caputo F, Viglino G, Verrina E. Can peritoneal dialysis be used as a long term therapy for end stage renal disease? Int Urol Nephrol 2003;35:569-77.
2. Thodis E, Passadakis P, Lyrantzopoulos N, Panagoussos S, Vargemezis V, Oreopoulos D. Peritoneal catheters and related infections. Int Urol Nephrol 2005;37:379-93.
3. Tzamaloukas AH, Gibel LJ, Eisenberg B, Goldman RS, Kanig SP, Zager PG, et al. Early and late peritoneal dialysate leaks in patients on CAPD. Adv Perit Dial 1990:6:64-71.
4. Leblanc M, Ouimet D, Pichette V. Dialysate leaks in peritoneal dialysis. Semin Dial 2001;14:50-4.
5. O’Connor JP, Rigby RJ, Hardie IR, Wall DR, Strong RW, Woodruff PW, et al. Abdominal hernias complicating continuous ambulatory peritoneal dialysis. Am J Nephrol 1986;6:271-4.
6. Tun KN, Tulehinsky M. Pericatheter leak in a peritoneal dialysis patient: SPECT/CT diagnosis. Clin Nucl Med 2012;37:625-8.
7. Bhattacharya A, Mittal BR. Peritoneo-scrotal communication: Demonstration by 99mtechnetium sulphur colloid scintigraphy. Australas Radiol 2005;49:335-7.
8. Ducassou D, Vuillemin L, Wone C, Ragnaud JM, Brendel AJ. Intraperitoneal injection of technetium-99m sulfur colloid in visualization of a peritoneo-vaginalis connection. J Nucl Med 1984;25:68-9.