

# Can cool dialysate alleviate restless leg syndrome in hemodialysis patients?

Sir,

Restless leg syndrome (RLS) highly affects hemodialysis patients, with a prevalence ranging from 20% to 80%. The most comprehensive RLS theories consider the syndrome to be associated with idiopathic, peripheral neuropathy, dopaminergic system dysfunction, and diminished iron reserves in particular cerebral spots. Calcium–phosphorous imbalance can also play roles in the incidence of RLS.<sup>[1]</sup>

Basic RLS treatment in hemodialysis patients is the special care, prescribed medications and kidney transplantation; common medications include dopamine agonists, which decrease its severity but are considered as optional treatments. Other medications are anticonvulsants, alpha-2 adrenergic agonists, iron salts, glucocorticosteroids, and benzodiazepines.<sup>[2]</sup> Since medications bring financial costs for governments and are associated with side effects, specialized care is preferred in alleviating RLS symptoms, with nonmedication interventions, for example, simple exercises, stretching body parts, massage, cold and hot showers, acupuncture, as well as transcutaneous electrical nerve stimulation.<sup>[3]</sup>

Other factors such as anxiety and depression during the treatment process aggravate the condition; it is also alleged to be associated with undesirable complications such as insomnia and adverse effects on the quality of life and general health.<sup>[4]</sup>

Cool dialysate can increase the quality of hemodialysis by helping eliminate more poisonous substances such as urea and creatinine, as well by minimizing the effect of these substances on the peripheral nervous system; this will affect RLS alleviation too. In addition, cool dialysate will lower tiredness and enhance energy by improving patients' mental and physical states, thereby improving their sleeping quality and lowering RLS symptoms. Furthermore, earlier studies argument that by lowering patients' anxiety and secondary depression, cool dialysate will increase their energy and good feeling, leading to lowered neuropathy.<sup>[5]</sup> In addition, a thermal exchange will occur between blood and cool dialysate solution (temperature around 35.5°); this will prevent body temperature from rising. Hemodialysis patients who are usually hypothermic gain heat

during hemodialysis; also, they experience vascular constriction.

Cool dialysate based on using 35.5°C dialysis solutions brings about a balanced thermal exchange between blood and hemodialysis solution which prevents vasodilatation and maintains the body temperature stability. Other advantages may include enhanced comfort, lowered tiredness, and refreshed energy during dialysis.<sup>[5]</sup> Therefore, cool dialysate can enhance the removal of toxic substances such as urea and creatinine, leading to minimized effects on the peripheral nervous system. On dialysis, peripheral neuropathy is diminished and RLS is inhibited to some extent. Furthermore, cool dialysate may play a role in controlling RLS by helping patients cope with secondary intradialytic depression and improving sleep.

On the other hand, since no effectively specific medication is advised for RLS and currently used medicines are all associated with side effects, quality of life and the costs of treatments in hemodialysis patients must be seriously taken into account.

Therefore, further research on the effect of cool dialysate on the RLS symptoms in hemodialysis patients is suggested so that if confirmed in research studies, the 35.5°C dialysis procedure can be used as an effective option in relieving RLS symptoms.

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## Conflicts of interest

There are no conflicts of interest.

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