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## Pleiotropic features of sevelamer in hemodialysis patients

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### Implication for health policy/practice/research/medical education

Sevelamer is a pleiotropic drug and has ameliorating effect on serum lipid, uric acid level and also on reactive oxygen species. Regardless of its beneficial effect on hyperphosphatemia in hemodialysis.

**Keywords:** Sevelamer, Phosphate binders, Hemodialysis, End stage renal disease

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We read with great interest the randomized clinical trial on a group of stable hemodialysis individuals who were treated with sevelamer carbonate versus sevelamer hydrochloride. They intended to compare the effect of two drugs on serum concentrations of triglyceride, uric acid and cholesterol. This study showed, sevelamer hydrochloride abridged serum uric acid, cholesterol and triglyceride values more than sevelamer carbonate, though these alterations were not meaningful (1). Regarding the sevelamer therapy in hemodialysis patients, we should remember some points. Hyperphosphatemia is a main problem in hemodialysis which is risk factor for heart vessels and soft tissue calcification in dialysis individuals, and requires an exact control by the phosphate binders (2). Additionally, hyperphosphatemia is accompanying with intensified risk of development of chronic renal failure and lessening of the anti-proteinuric efficacy of RAS (renin-angiotensin system) blockers (3). Meanwhile, several studies showed individuals with chronic kidney disease stages 3 to 5D receiving this drug have diminished all-cause death versus with those administering calcium-based binders (4). In a previous randomized, controlled, open-label, study, Qunibi et al, examined 203 stable hemodialysis individuals, who randomized into 103 cases assigned to calcium acetate, and 100 cases to sevelamer for one year to reach a phosphorus level of 3.5 to 5.5 mg/dL. Moreover, atorvastatin was included to attain serum low-density lipoprotein cholesterol concentration below than 70 mg/dL in the groups. Following one year, mean value of low-density lipoprotein cholesterol levels diminished to  $68.8 \pm 22.0$  mg/dL in the calcium-acetate cases versus

$62.4 \pm 23.0$  mg/dL in the sevelamer receiving patients ( $P = 0.3$ ). This study however showed after rigorous lowering of low-density lipoprotein cholesterol values for 12 months, the results of treatment were similar in both groups (5). Similarly, the study by Komaba et al showed, of 12564 individuals, around 2606 were subsequently treated with sevelamer, this study showed the administration of sevelamer as an alternative therapy or add-on is accompanied by ameliorated survival in cases on regular hemodialysis (6). Accordingly, the study on sevelamer hydrochloride on 39 end-stage renal showed an improvement in serum LDL cholesterol, calcium, uric acid and phosphate following 3 to 6 months post-sevelamer therapy (7). In a randomized, clinical trial on pleiotropic efficacy of sevelamer on a group of end stage kidney failure, Lin et al showed, amelioration of serum lipids, uric acid and reactive oxygen species in the sevelamer receiving group. They concluded that, this drug is a good candidate for management of high serum phosphorus value in hemodialysis cases with a high risk of heart disease (8). The study by Almasi et al showed that sevelamer either hydrochloride or carbonate had decreasing effect on lipids and uric acid showing the equal effect of both drugs as the pleiotropic impact of sevelamer (1). Therefore, regardless of phosphate regulatory effect of this drug attempts should also have directed towards other beneficial effect of sevelamer. Vlassara et al also mentioned further ameliorative effect of his drug like alteration of the gut microbiota and improving the diabetic kidney disease (9). Hence, larger studies are still necessary to better recognize all aspects of this drugs.

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### Authors' contribution

Conceptualization, resources, visualization, funding acquisition: MZ, EM; writing—review and editing: EM; Supervision, project administration: MZ.

### Conflicts of interest

The authors have no conflicts of interest.

### Ethical issues

Ethical issues (including plagiarism, data fabrication, double publication) have been completely observed by the authors.

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