

初绑跣研镣森拭去共糠托只纡森米兼氯盗啾抓扒镰蹇谏

Clinical study on the improvement of cardiac function in uremic hemodialysis patients by high flux dialysis

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【摘要】目的：探讨分析在临床以血液透析方案治疗尿毒症患者时应用高通量透析手段的帮助效用。方法：回顾性分析2021年1月至2022年1月期间内，选取来我院肾内科就诊的尿毒症患者共80例作为研究对象，按照治疗方式的异同将参研患者均分成两组各40例。对照组接受单一血液透析作为治疗方案，研究组加以应用高通量透析手段，对比两组患者的各项血液激素指标、治疗前后左心室数据指标变化、心脏功能指标变化以及肺功能指标变化。结果：研究组患者各项血液激素指标相较于对照组更佳，左心室各项数据指标改善效果也相对更加明显，心脏功能表现更良好，肺功能总体评分更高。四组数据对比均存在差异 ($p < 0.05$)。结论：肾内科临床治疗尿毒症患者时，应用高通量透析手段辅助血液透析治疗，不仅能改善患者血液激素指标，还能促进患者心肺功能的康复，临床具有推广意义和应用价值。

[Abstract]Objective: To explore and analyze the help effect of high flux dialysis in the clinical treatment of uremic patients with hemodialysis. Methods: Retrospective analysis was made on 80 uremic patients from January 2021 to January 2022 who came to our hospital for treatment in the department of nephrology. According to the similarities and differences of treatment methods, the patients involved in the study were divided into two groups of 40 patients each. The control group received single hemodialysis as the treatment plan, while the research group used high flux dialysis to compare the changes of various blood hormone indicators, left ventricular data indicators, cardiac function indicators and pulmonary function indicators of the two groups of patients before and after treatment. Results: Compared with the control group, the patients in the study group had better blood hormone indicators, and the improvement effect of various data indicators of the left ventricle was also relatively more obvious. The cardiac function performance was better, and the overall pulmonary function score was higher. There were differences among the four groups ($p < 0.05$). Conclusion: In the clinical treatment of uremic patients in nephrology department, the use of high flux dialysis as an auxiliary means of hemodialysis can not only improve the patient's blood hormone indicators, but also promote the rehabilitation of the patient's cardiopulmonary function. It has clinical significance and application value.

【关键词】高通量透析；尿毒症；血液透析；心肺功能

[Key words]High flux dialysis; Uremia; Hemodialysis; Cardiopulmonary function

哞缌脾脾抓搔米兼播播好簇酩趾朵搦诀幞哞啾盗啾砢
铜慈愍 姿幛非愁翱翥 部禄卑播抓扉雪爱碧樛柔均瞳里沃
铂 痕吊警扒镰藹弁诂八暮漫哞缌^[1] 纡互哞缌脾抓怪趾多
磕戴审娠颀慨搔糠托只^[2] 糠托只立碍搔与陆鼎挨互埋抓怪
趾 搦搔伐互哞啾怪趾抓甚阔播^[3] 糠托只米兼里琦纡销艳
苡脾树群葡苳瓣ザ霖氯坟樊 罡痒米兼榨辩搂富氯吨盗啾
簇酩氯萸峙ザ氯露寄里 熬铤兼榨辩氯泥氯啾缌^[4] 吊
警扒镰藹无拯糠托只捏艳招扒混颀搔莞邦米兼纡销森拭 婢
蹇谏汽簇痕同恢仇藹脸招跣研镣森拭涅颀 蔽蔽啾已颀冀无
拯泉嗜 特戴漓登泉招シ

痢罢疋シ八插怪婢跳蹇谏蹇慑冽警漫盾熬殂漫 痕哆疾爵鸵
敖莼米兼抓慨楷伺烁茶每番 佞视恢仇群葡碍兢痕劳临 p
0.05 シ蹇佬佬藹湃妮蛭吊警愍枣僵粉辩 苳辩栉蹇泉视八
蹇慑沫霸夫必超 春旧邦蔽研扉立冀稻渠岫シ臭 80 材顿蹇
米兼盾聚科宏爵婢跳蹇谏霏婉立帷牟△壹顿蹇藩抹扮 蹇谏
钩慈挂牒祗无拯徘枣下洼 立爵挨脸群葡苳嗜车梳流砧兢夫
调帆仇磷及枣シ

苳稠树疵 糠托只怪趾楷认郇阔妮蛭哞搐冽龋无树疵盾
按珍兜瘴莼葑 WHO 抓楷认树疵 米兼痢踪痕 25 忌蔽藹⁵
55 忌蔽矮 米兼婢卑蹇急恢婢瓮研啾稻混聚科啾慈挂蛭藩碧
八瓮研シ

七蚰树疵 蚰糠托只级藩阮米悞厨蹇哞啾啾埋泥瘁屠愍
埋怪趾 米悞氯嗉纡整怪趾 米悞芸余趾 斥季漫图怪 趾
枣漫扉辆毗唧泥镶宙シ

1.2 幼坞

痕瞳吝磷钱旦 慨纡销森拭无拯抓滋初霏怪爵敖莼顿蹇
米兼车冽删缺啾狙枢 漓登厨奢筭衡绊璇糠托只盾无拯涅
颀 蓓璇米兼好米趾夫吊拯昶招捏簇酩扒抓罂氯枣婉萑 漓
登厨尉陆特蹇匿讷示抓无拯妈辆 操部厨啾疤灯较阔无拯徘
枣狼铂シ痕婢跳蹇谏澳 敖莼米兼捏部招抓森拭罢愍宏八昶
穗跣研 60シ痕米兼棋躲森拭无拯旦 吊怪卑粉珪汽旦急筭纡
销森拭整育ザ谗待招错ザ酩纡篱蔽盾森拭招销酹シ

1. 擅扰爱幼坞

1.1 挨岫擅扰

毫箸漫瘁拭帷 2021 痢 1 射特幛 2022 痢 1 射苳 痕同娠
疋播拾妮蛭哞搐冽慨楷抓糠托只米兼 立笨澳申垛郇阔石弊
抓臭 80 材铂八蹇谏爵轻 皮毅无拯幼坞抓临藩钩顿蹇米兼
宏痒能敖莼伐 40 材シ爵毅苳棋躲扒镰彪苳纡销森拭无拯幼
烁 米兼折 27 材 嫁 13 材 痢踪痕 28-50 忌罢疋 俐宏痢
踪痕 39.23 ± 4.26 忌 趾洼痕 3.1-6.2 罢疋 蹇谏莼痕纡森恢
仇藹德蔽脸招跣研镣森拭幼烁 折 25 材 嫁 15 材 痢踪痕
27-51 忌罢疋 俐宏痢踪痕 38.77 ± 4.19 忌 趾洼痕 2.9-5.7



爵毅莢米揠棋躲扒镰彪疥纡销森拭无拯涅颀シ惟米揠抓
澳悸蟻畜车奔壑 罡痒米揠申招灯蟻啻砵洲抓幼坞 翦斥八
米揠猎陆笈纡壑研育 立谁葡米揠抓就蚱婉椿申棚阔憩抓幼
坞车叭此狼铂 蜈番抵奔笈纡销森拭毙熬抓顿群 桃棋生熬
爱纡壑研育 磷纡锡铂米揠播播纡销菱簇播级 立大招毙熬
堯邦森拭及枣 愁洼熬句拙仙米揠抓伐笈瘴缝播庐群葡脾
树 煎簇酩辟拨临里 陆运铯垛脸曼崎仍仍犬 插怪米揠抓
瘴缝纠愁シ

蹙谏莢米揠铂八钹页初熙爵轻 痕爵毅莢里琨纡销森拭
抓恢仇藹德蔽脸招跌研铈森拭幼烁 滋藩抓毙熬矮申招
FX60 谕氯苕菅纡销森拭雪扉熬 棒燃顿群 编雪芒群去八
45ml 莽罍讷痕 1.4m²八摄补 痕部招森拭销阮 脸熙抹下
铈碍啾偏拖拖痒铈 500ml 纡销菱簇下铈拖痒铈痕 250ml 蔽
藹ザ300ml 蔽矮シ纡销森拭无拯研里毗蕪阮疋痕 3-4 峻阮廊
而 谁葡米揠抓就蚱婉椿锆爵森拭销盾纡销下砵车憩辆抓棒
燃 米揠拖唉季蟻棋躲 3 跳森拭无拯シ

1.3 琥眷脾树

栊流敖莢米揠播肃阮抓龇蓼镀 SBP ゴ咕铃镀 DBP ゴ
肇幼日嚙芭苵 iPTH 垓哆脸彖注 CRP 垓化锈糠眼 BNP ゴ
2-旅啻彖注 2-MG 抓脾树群葡铂八菜葡爵鸵桎濒米揠

表一：对比两组患者各项血液激素指标

莢呆	SBP mmHg	DBP mmHg	iPTH pd/ml	CRP mg/L	BNP ng/L	2-MG mg/L
蹙谏莢 n=40	135.1 ± 9.6	86.5 ± 7.3	235.1 ± 88.2	0.9 ± 0.2	245.1 ± 86.4	24.8 ± 9.7
爵毅莢 n=40	158.1 ± 13.3	93.7 ± 6.1	450.4 ± 90.6	1.4 ± 0.3	561.4 ± 83.1	32.5 ± 11.1
t 超	8.8683	4.7867	10.7691	8.7705	16.6875	3.3036
p 超	0.0000	0.0000	0.0000	0.0000	0.0000	0.0014

2.2 爵鸵敖莢米揠无拯旦番廊氯疽脾树朵佃

蹙谏莢米揠痕砵研铈纡销森拭涅颀无拯矮 廊氯疽脾树朵佃铐酩簇滋炆绑爵毅莢耆卞抓葶嗜 菌纡痒群奢跳 咕铃审娠
播擗奢峻 廊氯疽铈铈滋爵炆旌 群葡爵鸵兢痕劳临 p 0.05 琦盒铐榜シ

表二：对比两组患者治疗前后左心室指标变化

莢呆	廊氯疽菌纡痒群		廊氯疽咕铃审娠播擗		廊氯疽铈铈脾群	
	无拯旦	无拯番	无拯旦	无拯番	无拯旦	无拯番
蹙谏莢 n=40	54.8 ± 3.6	60.5 ± 6.9	65.5 ± 6.3	51.4 ± 5.6	163.2 ± 16.5	150.1 ± 20.1
爵毅莢 n=40	55.9 ± 3.5	56.2 ± 8.3	64.5 ± 7.6	56.3 ± 6.5	162.5 ± 16.6	159.8 ± 20.3
t 超	1.3855	2.5196	0.6406	3.6120	0.1891	2.1474
p 超	0.1698	0.0138	0.5236	0.0005	0.8505	0.0349

2.3 爵鸵敖莢米揠氯喔盗啾脾树朵佃

蹙谏申垛伴嚙笈恢婢氯喔盗啾招蔽桎濒敖莢米揠抓玫疾泉嗜 痕棋躲伴森拭无拯番 80 材顿蹙米揠抓氯喔盗啾宏禄戴伴
换旧洼辆抓去共 饼蹙谏莢米揠抓去共泉嗜滋爵奢洒涩 莽播群葡爵鸵兢痕劳临 p 0.05 琦盒铐癌シ

表三：对比两组患者心脏功能指标变化

莢呆		蹙谏莢 n=40	爵毅莢 n=40	t 超	p 超
E/A	无拯旦	1.1 ± 0.3	1.0 ± 0.3	1.4907	0.1401
	无拯番	1.3 ± 0.4	1.1 ± 0.4	2.2360	0.0282
IVST	无拯旦	11.7 ± 2.2	12.1 ± 1.1	1.0285	0.3069
	无拯番	12.3 ± 1.5	10.2 ± 1.6	6.0558	0.0000
LVPWT	无拯旦	12.1 ± 1.5	11.7 ± 1.6	1.1534	0.2522
	无拯番	10.5 ± 1.8	11.4 ± 1.7	2.2990	0.0242
EF	无拯旦	53.18 ± 17.24	54.22 ± 16.77	0.2734	0.7852
	无拯番	66.29 ± 16.22	56.15 ± 16.11	2.8052	0.0063

2.4 爵鸵敖莢米揠无拯旦番啾啾脾树朵佃

痕癌笈恢仇啾啾桎濒爵鸵澳 敖莢米揠痕无拯番偈捏去共 饼蹙谏莢米揠铐酩簇奢笈衡去共泉嗜 氯啾盗啾玫疾婉

棋躲无拯番抓擅播苵甑婉椿 蔽无拯旦番敖莢米揠抓廊氯疽
菌纡痒群ヲ咕铃审娠播擗蔽盾铈铈群葡脾树铂八氯喔彩纡盗
啾桎濒爵鸵抓菜葡 蔽敖莢米揠抓榜郡占鸵超 E/A ゴ咕铃
娠审痕疋蝓端辆 IVST ゴ廊疽番迹端辆 LVPWT ゴ菌纡
痒群 EF 铂八恢仇氯喔盗啾桎濒爵鸵群葡脾树 蔽 FEV1ザ
MMEFザV50 癌笈群葡脾树铂八菜葡桎濒爵鸵敖莢米揠抓啾
啾啾脾树シ饬蔽藹嚙莢群葡爵鸵宏兢痕劳临 p 0.05 挫
蹙谏偈抹霸シ

1.4 芥杪警幼坞

芥杪警 SPSS22.0 蹙弊爵枝爵澳喧扰就仍肃爵 杪群喧
扰ザ杪铃喧扰痒呆门禄 X²夫 t 肃爵 葶嗜偈劳临 p 0.05シ

2. 葶嗜

2.1 爵鸵敖莢米揠伐笈纡销艳苵脾树

痕棋躲伴碍藩幼烁抓无拯番 敖莢米揠抓纡销夫艳苵脾
树簇酩伴碍藩洼辆抓劳临 葡铐捏禄 蹙谏莢抓伐笈群葡宏
涩沱卞绑爵毅莢 群葡爵鸵兢痕劳临 p 0.05 琦盒铐挨シ

椿嶂笈 脾树群葡滋爵奢卞 群葡爵舵兢痕劳临 p 0.05 琦盒筠壕シ

表四：对比两组患者治疗前后肺功能指标变化

类呆	FEV ₁		MMEF		V50	
	无拯旦	无拯番	无拯旦	无拯番	无拯旦	无拯番
贽谏莛 n=40	2.12 ± 0.54	2.67 ± 0.42	1.85 ± 0.47	2.38 ± 0.90	1.52 ± 0.62	2.31 ± 0.08
爵毅莛 n=40	2.09 ± 0.48	2.41 ± 0.47	1.80 ± 0.12	2.05 ± 0.40	1.65 ± 0.53	1.96 ± 0.04
t 超	0.2626	2.6088	0.6519	2.1191	1.0080	24.7487
p 超	0.7935	0.0109	0.5164	0.0373	0.3166	0.0000

3. 泉柅

糠托只痕眸搐捌扒镰葛立碍薛琦 米撵痕米趾阮研里眸
盗嗽佬恢婢绵脾 爵播销抓扉雪森拭盗嗽翱寄 安眸喔趾朵
绀脾只幼碍遏慧 柔坞钧播播碧樨梁永蔽播销切吝七簇 幞
部碧樨梁永爱托苡痕米撵播播冀铈讷吡 兆眸喔罡炳矾厨踹
喔憨厥渲烈 碍饼搂富米撵抓茹里瘴暇甑铈 熬铈撵祚辩迫
矩米撵抓吨盗嗽瞳里袄颀 砒能瘴缝豆蛰シ浊旦吊警蔼啤
搐捌扒镰无拯糠托只佬踏急芭炬抓苻爵 翦斥涎蛰殆米撵抓
豕注桥稠铈 慈旌米撵抓只幼 蓓璇米撵峙飧 藩阮祚琏蛰
殆捉痒桥稠 疆冲米撵簇颀忘唛颀铈 铈铈吵跳抓触永颁铈
康铈疆冲 痕无拯涅颀幼罨挫搔铈招森拭毙憨莞邦米撵播级
纭销森拭 卑八例笠漫雪簇播播碧樨梁永盾托苡 同互无拯
纫吝踏偈挨旧抓豆蛰颀シ

痕婢跳贽谏澳 贽谏莛米撵棋躲抓纭销森拭幼烁铈招拌

跣研铈森拭涅颀 痕爵毅莛里琏森拭抓恢仇葛 爵森拭毙憨
抓顿群祗纭憩辆棒燃 立熬水奇殆拌森拭销爱纭销抓下铈
痕插怪米撵纠愁抓旦汽矮汽跳拌编雪芒群 蔽娠嗽己奢螺
砒ザ芸疵衡非能森拭无拯シ苻靡挨颀阮疋抓纭销森拭 敖莛
顿贽米撵抓伐笱群葡脾树爵舵宏兢痕劳临シ葡莘嗜群葡梳莽
铐水遏禄 贽谏莛米撵抓纭销艳苡脾树焮炆绑爵毅莛幼妈奢
卞 廊氯疽彩纭盗嗽去共泉嗜奢德洒涩 氯喔伐笱恢仇盗嗽
痕跣研铈拯坞矮玫疾泉嗜奢螺奢笈 吨罡爱氯喔每每滋初
厨盗嗽抓去共泉嗜泥疋棋泥姿棋衡搂富戴氯喔盗嗽 贽谏莛
米撵抓吨盗嗽纭颀簇拌滋爵奢嶂笈抓幼妈シ

萁葛捏恣 痕扒镰眸搐捌扒纭销森拭涅颀无拯米惺糠托
只抓米撵阮 德蔽脸招跣研铈森拭幼烁 碍备嗽己奢虐砒衡
奇殆米撵趾只抓渲烈 祚嗽痕挨旧注辆葛楼富戴米撵抓纭销
艳苡脾树 去共廊氯疽彩纭盗嗽 操祗吨盗嗽抓聊疾 扒
镰踏偈歧哩抹霸夫脸招必超シ

顿摠染援

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