·临床研究·

维持性血液透析老年患者血管通路的特点

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【摘 要】 **目的** 本研究主要对老年(≥65岁)维持性血液透析(血透)患者的血管通路特点进行分析,旨在为老年血液透析患者的血管通路维护提供经验。**方法** 收集老年血液透析患者的一般资料,依导入透析时的年龄分为两组,老年组(≥65岁)116例,中年组(<65岁)130例,分析血管通路种类、建立和使用特点。采用SPSS 15.0软件对数据进行分析。计量资料以均数±标准差表示,两组间比较采用t检验。计数资料以百分率表示,组间比较采用χ^2检验。**结果** 老年组采用导管比例高于中年组(44% *vs* 10%,$P=0.006$),女性采用导管者众。老年组经急诊导入透析比例高(19.0% *vs* 5.4%, $P=0.008$)。老年组合并糖尿病、心脑血管疾病和外周血管疾病的比例增高,但在合并糖尿病或外周血管疾病的老年患者中,采用内瘘与采用导管的比例相似(50.7% *vs* 49.3%, $P=0.217$)。老年导管组营养状况[体质量指数(BMI)、血红蛋白和白蛋白]较其他组差($P=0.007$, $P=0.006$, $P=0.007$)。老年组的肘瘘比例高于中年组(8.3% *vs* 0.9%, $P<0.001$)。老年组的内瘘初始通畅时间短($P=0.009$),但累积通畅时间与中年组相近,其中经干预的比例高($P=0.006$)。老年组内瘘成熟不良发生率高(10.0% *vs* 3.5%,$P=0.008$)。老年组使用带涤纶套的导管比例高(30.4% *vs* 0.0%,$P<0.005$),两组导管通畅时间无明显差异,但老年组的导管感染率高(21.7% *vs* 15.3%,$P=0.006$)。**结论** 相对年轻患者,老年透析患者导管使用率和导管感染率均高,但通畅情况相似。老年透析患者肘瘘比例高,内瘘不易成熟且通畅情况略逊,但经积极处理可与年轻人接近。

【关键词】 血管通路;老年人;维持性血液透析
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Characteristics of vascular access in elderly patients receiving maintenance hemodialysis

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【**Abstract**】 **Objective** To analyze the features of vascular access in the elderly patients receiving maintenance hemodialysis (MHD) (≥ 65 years old) in order to provide experiences for long-term vascular access patency. **Methods** Clinical data of MHD patients admitted in our department from March 2009 to March 2013 were collected and retrospectively analyzed in this study. According to their age, the patients were divided into the elderly group (≥65 years old, $n=116$), and the middle-aged group (< 65 years old, $n=130$). The types, construction and usage of vascular access were analyzed. SPSS statistics 15.0 was used to analyze the data. The measurement data were expressed as mean ± standard deviation ($\bar{x}\pm s$), and Student's t test was employed for the comparison between groups. Enumeration data were expressed as percentage, and inter-group comparison was carried out with Chi-square test. **Results** The proportion of catheterization was significantly higher in the elderly group than in the middle-aged group (44% *vs* 10%, $P=0.006$), and it was more common in female patients regardless of the age. The elderly patients had obviously higher ratio of emergency (19.0% *vs* 5.4%, $P=0.008$), and higher prevalence of major comorbidities, such as diabetes, cardiovascular diseases and peripheral vascular diseases. But, the ratios of fistula establishment and catheterization were similar between the elderly complicated with diabetes or peripheral vascular disease (50.7% *vs* 49.3%, $P=0.217$). The nutritional status (BMI, hemoglobin and albumin) were significantly worse in the elderly catheterization group ($P=0.007$, $P=0.006$, $P=0.007$). In the elderly groups, there were more fistula established in the elbow than the middle-aged group (8.3% *vs* 0.9%, $P<0.001$). The primary patency of fistula was less in the elderly than the middle-aged group ($P=0.009$), but the cumulative patency was similar between the 2 groups, though with higher rate of interventions ($P=0.006$). The prevalence of fistula maturation failure was obviously higher in the elderly (10.0% *vs* 3.5%, $P=0.008$). There were more patients undergoing tunneled cuffed catheterization in the elderly group (30.4% *vs* 0.0%, $P<0.05$). No significant difference was seen in the catheter patency between the 2 groups, but the elderly group had higher incidence

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of catheter-related infections (21.7% *vs* 15.3%, $P=0.006$). **Conclusion** Compared with the middle-aged MHD patients, the elderly ones have higher prevalence of catheterization and catheter-related infections, but similar patency of catheter. Though they have higher rate of fistula in the elbow, worse patency and fistula maturation, active interventions will obtain better outcomes as in the younger patients.

【Key words】 vascular access; aged; maintenance hemodialysis

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随着老龄化社会来临,透析人群中老年患者的比例增速最快。2006年美国国家肾脏基金会(National Kidney Foundation,NKF)发布的肾脏疾病患者生存质量指导(kidney disease outcomes quality Initiative,KDOQI)推荐自体动静脉内瘘(autogenous arteriovenous fistula,AVF)为血液透析的首选,但该指南并未区分老年患者和年轻患者[1]。本文分析本院老年肾科2009年3月至2013年9月期间透析患者血管通路的特点,旨在为老年维持性血液透析(maintenance hemodialysis,MHD)患者血管通路的选择和并发症的防治提供依据。

1 对象与方法

1.1 研究对象

选取2009年3月至2013年3月期间在南京医科大学第一附属医院老年肾科透析的患者共246例。

1.2 研究方法

1.2.1 一般资料 收集患者导入透析时的相关信息,包括年龄、性别、体质量指数(body mass index,BMI)、甲状旁腺激素(intact pararthyroid hormone,iPTH)、血钙(Ca)、血磷(P)水平等。

1.2.2 血管通路的类型 自体动静脉内瘘依手术部位分为腕瘘和肘瘘。导管包括:不带涤纶套的导管和带涤纶套的导管。穿刺部位为颈内静脉或股静脉。

1.2.3 血管通路观察指标和相关定义 内瘘观察指标包括初始通畅时间、累积通畅时间、内瘘成熟不良的发生率、需介入/外科处理的发生率。初始通畅时间:指通路建立至首次干预所经历的时间。累积通畅时间:指通路建立至完全失败所经历的时间。内瘘成熟不良:包括即刻内瘘失败(内瘘建立后72 h内未出现杂音或震颤)、早期成熟不良(内瘘建立后3个月内经干预仍不能使用)和晚期成熟不良(内瘘建立后6个月内经干预仍不能使用)。以上均由有经验的外科医师、肾科医师或血液透析护士作出判断。

导管相关感染和导管通畅性的指标包括导管初始通畅时间、导管累积通畅时间及导管相关感染发生率。导管初始通畅时间:指自导管置入至首次干预(包括溶栓、纤维鞘剥脱、血栓切除等)所经历的时间。导管累积通畅时间:指自导管置入至该导管更换或拔除所经历的时间。导管相关感染:包括导管出口、隧道感染及导管相关菌血症[2,3]。

1.3 统计学处理

采用SPSS 15.0软件对数据进行分析。计量资料以均数±标准差表示,两组间比较采用 t 检验。计数资料以百分率表示,组间比较采用 χ^2 检验。$P<0.05$为差异有统计学意义。

2 结 果

2.1 患者的一般情况

依年龄分为两组,老年组(≥65岁)116例,中年组(<65岁)130例。老年组采用导管比例高于中年组(44% *vs* 10%,$P=0.006$),女性采用导管者众。老年组经急诊导入透析比例高(19.0% *vs* 5.4%, $P=0.008$)。老年组合并糖尿病、心脑血管疾病和外周血管疾病的比例增高,但在合并糖尿病或外周血管疾病的老年患者中,采用内瘘与采用导管的比例相似(50.7% *vs* 49.3%, $P=0.217$)。老年导管组营养状况[体质量指数(BMI)、血红蛋白和白蛋白)较其他组差($P=0.007$, $P=0.006$, $P=0.007$)。老年组的肘瘘比例高于中年组(8.3% *vs* 0.9%, $P<0.001$;表1)。

2.2 血管通路建立和使用特点的观察

血管通路使用观察中有14例失访。4例转至外地透析,其中老年组2例,中年组2例;10例因不同原因死亡,其中2例死于脑出血(老年组、中年组各1例),2例死于心肌梗死,均为老年组;6例死于严重感染(老年组5例,中年组1例)。两组患者共计有232例纳入血管通路观察。老年组的内瘘初始通畅时间短($P=0.009$),但累积通畅时间与中年组相近,其中经干预的比例高($P=0.006$)。老年组内瘘成熟不良发生率高(10.0% *vs* 3.5%,$P=0.008$)。老年组使用带涤纶套的导管比例高(30.4% *vs* 0.0%,$P<0.005$),两组导管通畅时间无明显差异,但老年组的导管感染率高(21.7% *vs* 15.3%, $P=0.006$;表2)。

表 1 导入透析时的患者基线特征

Table 1 Baseline characteristics of the study population at the time of dialysis onset

Item	Elderly group (n = 116)		Middle-aged group (n = 130)	
	Fistula establishment (n = 65)	Catheterization (n = 51)	Fistula establishment (n = 117)	Catheterization (n = 13)
Age (years, $\bar{x} \pm s$)	75.8 ± 7.4	84.4 ± 7.5	42.1 ± 11.1	40.8 ± 13.4
Female [n (%)]	8 (12.3)	16 (31.4)	30 (23.9)	5 (38.4)
BMI (kg/m^2, $\bar{x} \pm s$)	22.4 ± 3.5	20.6 ± 3.1	22.9 ± 2.6	22.0 ± 2.4
Emergency dialysis [n (%)]	6 (9.2)	16 (31.3)	5 (4.3)	2 (15.4)
DM [n (%)]	26 (40.0)	25 (49.0)	16 (13.7)	1 (7.7)
CVD [n (%)]	39 (60.0)	29 (56.9)	27 (23.8)	3 (23.1)
CBVD [n (%)]	31 (47.7)	26 (51.0)	15 (12.8)	2 (9.2)
PVD [n (%)]	10 (15.3)	10 (19.6)	11 (9.4)	2 (9.2)
Hemoglobin (g/L, $\bar{x} \pm s$)	98.6 ± 8.4	91.6 ± 8.7	102.1 ± 9.0	98.9 ± 8.8
Albumin (g/L, $\bar{x} \pm s$)	32.8 ± 3.3	28.8 ± 3.1	38.0 ± 3.4	37.4 ± 3.1
PTH (pg/ml, $\bar{x} \pm s$)	174.7 ± 142.5	123.6 ± 164.7	264.5 ± 193.1	275.3 ± 171.4
Ca (mmol/L, $\bar{x} \pm s$)	2.2 ± 0.4	2.0 ± 0.2	2.3 ± 0.3	2.1 ± 0.2
P (mmol/L, $\bar{x} \pm s$)	1.6 ± 0.4	1.5 ± 0.4	1.7 ± 0.3	1.5 ± 0.4

BMI: body mass index; DM: diabetes mellitus; CVD: cardiovascular disease; CBVD: cerebral vascular disease; PVD: peripheral vascular disease; PTH: parathyroid hormone; Ca: calcium; P: phosphorate

表 2 血管通路特点和并发症的观察

Table 2 Features of vascular access and complications

Fistula establishment	n	Elbow fistula [n (%)]	Primary patency (min, $\bar{x} \pm s$)	Cumulative patency (min, $\bar{x} \pm s$)	Intervention/surgery [n (%)]	Failure to mature [n (%)]
Elderly group	60	5 (8.3)	30.7 ± 3.3	42.5 ± 3.1	8 (13.3)	6 (10)
Middle-aged group	113	1 (0.9)	40.1 ± 3.5	44.8 ± 3.8	6 (5.5)	4 (3.5)

Catheterization	n	TCC [n (%)]	Primary patency (min, $\bar{x} \pm s$)	Cumulative patency (min, $\bar{x} \pm s$)	Catheter-related infection [n (%)]
Elderly group	46	14 (30.4)	4.8 ± 4.0	21.6 ± 3.1	10 (21.7)
Middle-aged group	13	0 (0.0)	4.6 ± 3.7	22.2 ± 2.9	2 (15.3)

TCC: tunneled cuffed catheter

3 讨 论

随着老年人口日益增多,老年 MHD 患者逐年增加[4,5]。老年 MHD 患者在血管通路问题上存在许多不利因素:(1)血管病变多且严重,尤其在伴有高血压、糖尿病、高血脂的患者更易出现动脉壁增厚、管腔狭窄、血管弹性差、脆性高;(2)更多暴露于医疗干预致使血管内膜损伤;(3)合并其他基础疾病较多,易发生低血压、凝血,这不论对病情本身还是透析通路(包括内瘘和导管)都是不利的;(4)对血管通路自我维护能力差。Leapmann 等[6] 和 Windus等[7]对“血管通路首选内瘘”提出质疑,认为部分患者有其自身特点,尤其是糖尿病患者和老年人。本研究提示,合并糖尿病或外周血管疾病的老年患者中,采用内瘘和导管的比例相似。这说明这些不利因素对各种类型的血管通路都是共同的,充分评估、选择合适的血管通路,对老年血液透析患者更加重要。

有研究在总结了 188 例高龄(≥70 岁)血液透析患者后指出,AVF 是老年人首选的血液透析方式[8]。本研究并不认为年龄是决定患者通路类型的绝对因素,但结果显示,老年患者导管使用率高,我们分析这可能与其内瘘成熟难或通畅率低、部分超高龄患者预期生存时间短而没有必要建立内瘘有关。另外,我们发现老年患者经由急诊导入透析者比例高,这可能也是这部分患者导管使用率高的原因之一。研究显示,≥75 岁的透析患者在透析之初有近 85% 应用中心静脉导管;≥65 岁的透析患者在透析 3 个月之后仍有 66% 使用导管。这说明,虽然指南认为 AVF 是血液透析的最理想通路,但对老年 MHD 患者并不总是可行的。Charmaine 等[9] 报道,≥65 岁的女性倾向于采用移植物(graft)作为透析通路的首选。本研究结果显示,无论是老年或中年患者,女性采用导管的比例均高于男性,这可能与女性身材矮小、血管更细,以及部分女性畏惧反复穿刺疼痛、拒绝内瘘有关。但亦有学者发现,女性首次透

析更倾向于使用内瘘[10]。

Lazarides 等[11]发现,在≥80 岁的透析患者中,那些得到透析前照料、有计划地建立通路、营养良好以及在透析之初即采用 AVF 者生存状况更佳。我们的研究则从另一个角度佐证了他们的观点:导管组 BMI 值低,老年 MHD 患者中,血红蛋白和白蛋白水平低,提示老年导管组的营养不良程度更严重,预示生存不良。

本研究中高龄患者采用肘瘘的比例较高。对于前臂血管条件欠佳的高龄患者,不必遵循"桡动脉-头静脉内瘘首选"的原则;如有可能,初始内瘘选择在肘部,如将桡动脉近端与合适的静脉吻合,或肱动脉与合适的静脉吻合,可能获得更高的手术成功率和内瘘通畅率。桡动脉-头静脉内瘘(radio-artery and coronal-vein inner fistula, RC)的优势之一就是,假如失败,可以建立相对近端的通路。然而对于已预计到 RC 手术复杂且预期寿命短的部分老年 MHD 患者来说,一味保护近端的通路位点似乎没有太大意义。Letourneau 等[12]发现,超过 50% 的≥75 岁透析患者在透析后 2 年内死亡,平均生存时间 31 个月;Joly 等[13]报道≥80 岁的透析患者中位生存期为 28 个月。

我们发现,老年组的内瘘初始通畅时间短,但经溶栓、经皮腔内血管成形术(percutaneous transluminal angioplasty,PTA)或手术等干预后,累积通畅时间可与中年组接近。因此,不能因为高龄而取消老年 MHD 患者做瘘的资格、或降低干预的积极性。充分的术前术后评估和积极的处理可使老年人的内瘘通畅率与其他患者相近。此外,老年透析患者导管感染率高,这与老年人免疫力低、皮肤屏障功能差及营养不良等有关。老年透析患者导管的初始通畅时间和累积通畅时间与中年组无明显差异,这提示,尽管导管并不是最理想的方式,但导管在流量相关的问题上与中年组的使用情况是相似的。

总之,老年 MHD 患者在血管通路的选择制作、使用维护和并发症处理方面存在其自身的特点。在临床工作中,我们应根据患者的特点,结合本单位技术专长,选择合适的血管通路,术前充分评估、术后定期监测、维护,提高通路长期通畅率,为患者谋求最大的益处。

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