·临床研究·

两种不同术式治疗交通性脑积水临床分析

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【摘要】 **目的** 探讨两种手术方式治疗交通性脑积水之疗效和并发症。**方法** 分别采用脑室-腹腔分流术或腰大池-腹腔分流术治疗43例交通性脑积水患者，比较其疗效和并发症发生率。**结果** 两种术式疗效比较，差异无统计学意义（均$P>0.05$），但脑室-腹腔分流术组癫痫[36.36%（8/22）对0，$P=0.008$]、感染[36.36%（8/22）对4.76%（1/21），$P=0.030$]、颅内出血[27.27%（6/22）对0，$P=0.032$]等并发症发生率高于腰大池-腹腔分流术组。**结论** 腰大池-腹腔分流术治疗交通性脑积水之疗效优于脑室-腹腔分流术，大多数患者可以腰大池-腹腔分流术替代脑室-腹腔分流术。

【关键词】 脑积水； 脑室腹膜分流术； 手术后并发症

Clinical analysis of two kinds of surgical procedures for the treatment of communicating hydrocephalus

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【**Abstract**】 **Objective** To explore the therapeutic effects and complications of two kinds of surgical procedures for the treatment of communicating hydrocephalus. **Methods** Ventriculoperitoneal shunt (VPS) and lumboperitoneal shunt (LPS) were respectively adopted to treat 43 cases of communicating hydrocephalus. The therapeutic effects and complications were analyzed, and related literatures were reviewed. **Results** No significant difference was found between 2 groups in therapeutic effects, such as alleviating headache, improving intelligence and ventricle shrinking ($P>0.05$, for all). The incidence of complications of ventriculoperitoneal shunt, mainly including epilepsy [36.36% (8/22) vs 0, $P=0.008$], infection [36.36% (8/22) vs 4.76% (1/21), $P=0.030$], intracranial hemorrhage [27.27% (6/22) vs 0, $P=0.032$], and so on was significantly higher than that of lumboperitoneal shunt. **Conclusions** For communicating hydrocephalus, the effect of lumboperitoneal shunt is better than that of ventriculoperitoneal shunt, so the latter can be replaced by the former in most cases, except for infection or serious abnormality at operative site.

【**Key words**】 Hydrocephalus; Ventriculoperitoneal shunt; Postoperative complications

交通性脑积水的常用手术方式为脑室-腹腔分流术（VPS），但术后易发生穿刺部位血肿、颅内感染、过度分流、癫痫等并发症[1]。因此，有学者采用腰大池-腹腔分流术（LPS）治疗脑积水[2]。笔者对成都大学附属医院神经外科2010年8月–2013年12月施行脑室-腹腔分流术或腰大池-腹腔分流术的43例交通性脑积水患者的临床资料进行回顾分析，并对两种术式的疗效和并发症发生率进行比较，以为临床提供一些参考。

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资料与方法

一、一般资料

共43例患者，男性25例，女性18例；年龄18～64岁，平均43岁。临床主要表现为头痛、智力障碍、步态不稳、尿失禁、记忆力减退、视力视野缺损、昏迷（表1）；均经头部CT和（或）MRI检查明确诊断（诊断标准为：额角指数>33%，且排除肿瘤、先天性畸形、中脑导水管狭窄等引起的梗阻性脑积水）。病因为颅脑创伤（24例）、自发性颅内出血（17例）或颅内感染（2例）。根据术式分为脑室-腹腔分流术

组(22例)和腰大池-腹腔分流术组(21例)。

二、治疗方法

1.手术步骤 采用德国Aesculap AG&Co.KG公司生产的Miethke可调压式抗虹吸分流管。术前经腰椎穿刺术测量颅内压以设定分流泵压力,一般设置低于实际测得的颅内压50 mm H_2O(1 mm H_2O = 9.81×10^{-3} kPa);同时留取脑脊液标本以排除脑脊液白细胞计数增加或蛋白定量升高、颅内感染等导致分流管堵塞和(或)感染的因素。采用气管插管和静脉复合麻醉,脑室-腹腔分流术组患者仰卧位,首选右侧侧脑室前角进行穿刺,若有其他原因(如局部去骨瓣减压等)可选择左侧侧脑室前角,分流管经耳后、颈外侧区、胸部皮下隧道达下腹部,静水压阀门uniGAV置耳后并与身体纵轴平行,于右(或左)下腹脐与髂前上棘连线中外1/3处作约4 cm斜切口并进入腹腔,分流管腹腔端末段置于膀胱直肠陷凹或膀胱子宫陷凹,腹腔端留置长度为30 cm。腰大池-腹腔分流术组患者一般取左侧卧位(有右下腹手术史或腹壁局部感染者取右侧卧位),取L_{3-4}或L_{4-5}椎间隙行半椎板切除术,切除部分黄韧带,硬脊膜小切口(约0.50 cm)将分流管沿头端至尾端方向置入腰大池,脑脊液流出通畅即可缝合硬脊膜并固定分流管,分流管经腰部、侧腹部皮下隧道达下腹部,分流阀门置于髂嵴处便于按压,于右(或左)下腹脐与髂前上棘连线中外1/3处作约4 cm斜切口并进入腹腔,分流管腹腔端末段置于膀胱直肠陷凹或膀胱子宫陷凹,腹腔端留置长度为30 cm。

2.疗效判断 疗效评价指标包括术后头痛、智力障碍、步态不稳、尿失禁、记忆力减退、视力视野缺损、意识障碍等症状与体征是否好转,以及影像学检查脑室是否缩小。

三、统计分析方法

采用SPSS 19.0统计软件进行数据处理与分析。计数资料以相对数构成比(%)或率(%)表示,行χ^2检验或Fisher确切概率法。以$P \leq 0.05$为差异具有统计学意义。

结 果

本组患者随访3个月至3年,复查头部CT或MRI。两组患者疗效比较,差异无统计学意义(均$P > 0.05$,表2)。术后并发症比较,脑室-腹腔分流术组患者癫痫、感染和颅内出血发生率高于腰大池-腹腔分流术组(均$P < 0.05$),而其他并发症发生率组间差异无统计学意义(均$P > 0.05$,表3)。

表1 43例脑积水患者临床表现 例(%)

Table 1. Clinical manifestations of 43 patients case (%)

Clinical manifestation	VPS (N = 22)	LPS (N = 21)
Headache	15 (68.18)	13 (61.90)
Dysgnosia	13 (59.09)	12 (57.14)
Gait disturbance	13 (59.09)	13 (61.90)
Urinary incontinence	12 (54.55)	10 (47.62)
Memory disorder	11 (50.00)	12 (57.14)
Disturbance of vision and visual field	11 (50.00)	9 (42.86)
Coma	6 (27.27)	7 (33.33)

VPS, ventriculoperitoneal shunt, 脑室-腹腔分流术; LPS, lumboperitoneal shunt, 腰大池-腹腔分流术。The same as tables below

讨 论

在本研究中,脑室-腹腔分流术和腰大池-腹腔分流术治疗交通性脑积水疗效无明显差异,但前者并发症发生率高于后者且相对严重,主要为癫痫、感染和颅内出血。两组患者过度分流发生率基本相同,可能与所有病例均采用可调压式抗虹吸分流管有关;脑室-腹腔分流术组患者分流管堵塞2例、腰大池-腹腔分流术组未发生分流管堵塞,但组间差异未达到统计学意义($P = 0.488$)。

脑室-腹腔分流术是神经外科经典的脑脊液分流术式,既适用于交通性脑积水,又适用于梗阻性脑积水,但是存在以下问题:(1)因穿刺脑组织易致癫痫发作,本组22例行脑室-腹腔分流术患者中8例出现癫痫发作。同时,穿刺可能导致颅内血管损伤,引起脑室内出血、颅内出血或硬膜下血肿[3],严重者甚至需要行血肿清除术。(2)脑室穿刺技术要求较高[4],若穿刺方向偏离,可导致穿刺失败或反复穿刺,从而增加脑组织损伤机会,使术后癫痫发作或颅内出血风险增加[5]。置管深度也至关重要,置管过深则可能置入第三脑室,甚至丘脑,置管过浅则脑积水改善后皮质回缩使分流管末端位于脑组织中而引流欠佳,脑积水再次加重。(3)脑组织碎屑、穿刺出血形成的凝血块、侧脑室脉络丛等均可堵塞分流管侧孔,尤其是分流管行程较长时,更易导致分流管堵塞或引流不畅[6],本组脑室-腹腔分流术组有2例患者发生引流管堵塞。(4)由于站立位时脑室与腹腔不在同一平面,落差较大易产生虹吸作

表2 脑室-腹腔分流术组与腰大池-腹腔分流术组患者疗效的比较* 例(%)

Table 2. Comparison of therapeutic effects between 2 groups* case (%)

Group	N	Headache alleviated	N	Intelligence improved	N	Gait disturbance improved	N	Urinary incontinence improved
VPS	15	14 (93.33)	13	12 (92.31)	13	11 (84.62)	12	10 (83.33)
LPS	13	13 (100.00)	12	11 (91.67)	13	10 (76.92)	10	8 (80.00)
P value		1.000		1.000		1.000		1.000
Group	N	Memory improved	N	Vision and visual field improved	N	Consciousness improved	N	Ventricle shrinking
VPS	11	10 (90.91)	11	9 (81.82)	6	5 (83.33)	22	22 (100.00)
LPS	12	11 (91.67)	9	8 (88.89)	7	6 (85.71)	21	21 (100.00)
P value		1.000		1.000		1.000		—

*Fisher's exact test

表3 脑室-腹腔分流术组与腰大池-腹腔分流术组患者术后并发症发生率的比较 例(%)

Table 3. Comparison of postoperative complications between 2 groups case (%)

Group	N	Obstruction of shunt pipe*	Disruption of shunt pipe	Epilepsy	Infection
VPS	22	2 (9.09)	0 (0.00)	8 (36.36)	8 (36.36)
LPS	21	0 (0.00)	0 (0.00)	0 (0.00)	1 (4.76)
χ^2 value		—	—	7.134	4.715
P value		0.488	—	0.008	0.030
Group	N	Intracranial hemorrhage	Slit ventricle syndrome*	Intracranial hypotension syndrome*	
VPS	22	6 (27.27)	1 (4.55)	1 (4.55)	
LPS	21	0 (0.00)	0 (0.00)	0 (0.00)	
χ^2 value		4.578	—	—	
P value		0.032	1.000	1.000	

*Fisher's exact test

用,可由于过度分流致裂隙脑室综合征(SVS)、低颅压综合征或桥静脉撕裂形成硬膜下血肿等。目前临床应用的分流管虽具有抗虹吸作用,但本研究脑室-腹腔分流术组各有1例患者发生裂隙脑室综合征和低颅压综合征,与腰大池-腹腔分流术组相比,差异未达到统计学意义。(5)手术范围广泛、分流管路径较长使发生感染的风险增加。本研究脑室-腹腔分流术组有8例患者发生感染,腰大池-腹腔分流术组仅1例。(6)已行去骨瓣减压术的患者,因脑组织膨出明显,短期内无法行颅骨缺损修补术,但早期脑积水需及时处理,因此分流术常先于颅骨缺损修补术,由于局部颅骨缺损,分流阀储液囊无法固定,故不宜行脑室-腹腔分流术。腰大池-腹腔分流术的优点包括:(1)无需穿刺脑组织,避免癫痫、颅内出血等并发症的发生[7]。(2)创伤小、分流管路径短,引流管堵塞或感染的机会相对减少。(3)手术操作更安全、省时、简便。(4)儿童患者无需再次手术换管。(5)可采取局部麻醉。(6)符合正常的脑脊液循环,利用腹腔与腰大池基本处于同一平面的特点,减少二者高度落差和虹吸作用,因此过度分流发生率降低[8-9]。(7)已施行去骨瓣减压术的患者,仍可行腰大池-腹腔分流术。其缺点是:仅适用于交通性脑积水,梗阻性脑积水患者若施行此术式易导致脑疝,甚至死亡。此外,若患者侧脑室与腰大池之间存在梗阻因素,也为禁忌[3]。

迄今为止,各种分流术都存在并发症的可能,如感染、分流管堵塞、过度引流或引流不足等。因此,手术方式和材料有待进一步改进。本研究采用半椎板切除术,较以往的全椎板切除术对脊柱稳定性的影响更小。但有文献报道,腰椎穿刺置入分流管腰大池端损伤更小,对脊柱稳定性无影响、手术时间更短,而分流管腹腔端也可采用腰椎穿刺的方式置入[10]。因此,我们的手术方式及分流管材料仍待进一步改进。

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