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不同分流方案联合颅骨修补治疗颅脑损伤减压术后交通性脑积水疗效比较

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摘要:目的 探讨分期和同期分流+颅骨修补方案对颅脑损伤减压术后交通性脑积水病人疗效及安全性的影响。**方法** 研究对象选取重庆市开州区人民医院2015年6月至2017年3月收治颅脑损伤减压术后交通性脑积水病人共104例,其中A组(52例)采用分期分流联合颅骨修补方案治疗,B组(52例)采用同期分流联合颅骨修补方案治疗,比较两组近期疗效,手术前后格拉斯哥昏迷评分(GCS评分)、格拉斯哥预后评分(GOS评分)及术后并发症发生率。**结果** B组近期治疗总有效率(90.38%)显著高于A组(71.15%)($P<0.05$);B组术后6个月GCS评分(12.89±1.78)分和GOS评分(4.30±0.95)分均显著优于A组[(10.02±1.56)分,(3.57±0.70)分]、术前[(7.19±1.33)分,(2.15±0.50)分]($P<0.05$);同时B组术后并发症发生率(5.77%)显著高于A组(19.23%)($P<0.05$);下腔-腹腔分流术(VPS)术和腰蛛网膜下腔-腹腔分流术(LPS)治疗颅脑损伤减压术后交通性脑积水疗效比较差异无统计学意义($P>0.05$);但LPS术术后并发症发生率(7.32%)显著低于VPS术(15.87%)($P<0.05$)。**结论** 颅脑损伤减压术后交通性脑积水病人行同期分流联合颅骨修补方案可显著缓解相关临床症状,促进颅内压水平降低和脑室缩小,降低伤残等级;但分期手术则有助于预防术后并发症发生;同时采用LPS术更有助于提高手术安全性。

关键词:脑积水; 颅脑损伤; 减压颅骨切除术/副作用; 脑室腹膜分流术; 治疗结果; 分期手术; 同期手术

Clinical effects and safety comparison of different kinds of shunt plus cranioplasty in the treatment of patients with communicating hydrocephalus after craniocerebral injury decompression

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Abstract:Objective To investigate the influence of simultaneous operation and staging operation for shunt plus cranioplasty on the clinical efficacy and safety of patients with communicating hydrocephalus after craniocerebral injury decompression.**Methods** 104 patients with communicating hydrocephalus after craniocerebral injury decompression were chosen in People's Hospital of Kaizhou District from June 2015 to March 2017 and divided into 2 groups including A group (52 patients) with simultaneous operation for shunt plus cranioplasty and B group (52 patients) with staging operation for shunt plus cranioplasty.The clinical effects for short-term,GCS score and GOS score before and after operation and postoperative complications incidence of both groups were compared.**Results** The clinical effects for short-term (90.38%)of B group were significant higher than A group(71.15%)($P<0.05$). The GCS score[(12.89±1.78)points] and GOS score [(4.30±0.95)points]after operation of B group were significant lower than before operation[(7.19±1.33)points,(2.15±0.50)points] and A group [(10.02±1.56)points,(3.57±0.70)points]($P<0.05$).The postoperative complications incidence (5.77%)of B group were significant higher than A group(19.23%)($P<0.05$).There was no significant difference in the clinical effects between VPS operation and LPS operation($P>0.05$).The postoperative complications incidence (7.32%)of LPS operation were significant lower than VPS operation(15.87%)($P<0.05$).**Conclusions** Simultaneous operation for shunt plus cranioplasty in the treatment of patients with communicating hydrocephalus after craniocerebral injury decompression can efficiently alleviate related clinical symptoms,promote intracranial pressure reduction and ventricular contraction and reduce the disability degree,while staging operation for shunt plus cranioplasty application could be helpful to prevent the postoperative complications.LPS application possess could elevate operation safety.

Key words: Hydrocephalus; Craniocerebral trauma; Decompressive craniectomy/adverse effects; Ventriculoperitoneal shunt; Treatment outcome; Staging operation; Simultaneous operation

去骨瓣减压术是颅脑损伤继发颅内压异常增高主要治疗方案之一,可快速有效降低颅内压和改善临床预后[1];但大量临床报道显示[2-3],病人在术后1~6个月较易发生脑积水,且50%以上为交通性脑积水;目前对于此类病人颅多行分流+颅骨修补术治疗[4],但对于同期还是分期完成两种术式医学界尚存在较大争议,相关临床诊疗指南亦无明确推荐[4]。本研究旨在探讨分期/同期分流联合颅骨修补方案对颅脑损伤减压术后交通性脑积水病人疗效及安全性的影响,现报告如下。

1 资料与方法

1.1 一般资料 选取重庆市开州区人民医院2015年6月至2017年3月收治颅脑损伤减压术后交通性脑积水病人共104例;纳入标准:(1)符合交通性脑积水诊断标准[5];(2)脑积水发生于术后3~6个月;(3)侧脑室明显扩张;(4)脑室/头顶间径比值≥0.26;(5)年龄范围为18~65岁;(6)病人或其近亲属知情同意,本研究符合《世界医学协会赫尔辛基宣言》相关要求。排除标准:(1)其他原因导致脑室扩大;(2)颅骨缺损直径≤3 cm;(3)急性脑积水;(4)凝血障碍;(5)重要脏器功能障碍;(6)妊娠哺乳期女性;(7)临床资料不全。其中A组(52例)采用分期分流联合颅骨修补方案治疗,男性35例,女性17例,年龄为(35.70±6.44)岁,颅骨缺损面积为(202.81±19.62)cm^2,其中行下腔-腹腔分流术(VPS)分流术30例,行腰蛛网膜下腔-腹腔分流术(LPS)22例;B组(52例)采用同期分流联合颅骨修补方案治疗,B组中男性37例,女性15例,年龄为(35.79±6.47)岁,颅骨缺损面积为(200.15±19.18)cm^2,其中行VPS术33例,行LPS术19例。两组一般资料比较差异无统计学意义($P>0.05$)。

1.2 治疗方法 A组行分期分流联合颅骨修补方案治疗,即首先采用LPS术/VPS术,4周后再采用颅骨修补术;LPS分流术中腰椎穿刺后于穿刺点作长5 cm延长切口,穿刺成功后拔出针头,沿穿刺针套将分流管置入(约10~12 cm),再进针5 cm后将穿刺针拔出,于穿刺平面上髂棘前内侧切开5 cm,导入腰穿分流管;再于腹直肌旁作长度5 cm切口,置入腹腔端分流管(约20 cm)后连接腹腔和髂棘处切口;VPS分流术中依次行侧脑室及脑室穿刺,置管保证腹腔端达腹腔内20~30 cm,分流泵置于枕部;B组则采用同期分流联合颅骨修补方案治疗,即先行脑积水LPS或VPS分流术,待脑脊液引流完、颅内压降低及脑组织回缩满意后行钛网颅骨修补术。

1.3 观察指标 (1)格拉斯哥昏迷评分(GCS评分)指标包括睁眼、语言及活动,正常分值为15分,分值越低提示昏迷程度越重[6];(2)格拉斯哥预后评分(GOS评分)越高提示远期预后越佳,分值1~5分,分为死亡、植物生存、重度残疾、中度残疾及良好[6];(3)记录术后感染、血肿、引流管堵塞、分流不足或过度及癫痫发生情况。(4)疗效判定标准[6]:显效,症状明显缓解或消失,颅内压下降,且脑室缩小;有效,症状有所缓解,颅内压下降,但脑室未见缩小;无效,临床症状未见缓解或加重,颅内压未下降或升高,同时脑室未见缩小或扩大。

1.4 统计学方法 数据分析选择SPSS 22.0软件;统计学方法采用t检验或χ^2检验,检验水准为$\alpha=0.05$。

2 结果

2.1 两组近期疗效比较 A组中显效30例,有效7例,无效15例,总有效率为71.15%;B组中显效39例,有效8例,无效5例,总有效率为90.38%;B组近期治疗总有效率显著高于A组($\chi^2=6.19$,$P=0.01$)。

2.2 两组手术前后GCS评分和GOS评分比较 B组术后6个月GCS评分和GOS评分均显著优于A组、术前($P<0.05$),见表1。

表1 不同分流方案联合颅骨修补治疗颅脑损伤减压术后交通性脑积水104例手术前后格拉斯哥昏迷评分(GCS评分)和格拉斯哥预后评分(GOS评分)比较/(分,$\bar{x}\pm s$)

组别	例数	GCS评分		GOS评分	
		术前	术后6个月	术前	术后6个月
A组	52	7.30±1.40	10.02±1.56[a]	2.12±0.48	3.57±0.70[a]
B组	52	7.19±1.33	12.89±1.78	2.15±0.50	4.30±0.95
t值		0.64	4.71	0.47	4.28
P值		0.31	0.00	0.41	0.00

注:与术前比较,[a]$P<0.05$

2.3 两组术后并发症发生率比较 B组术后并发症发生率显著高于A组($P<0.05$),见表2。

表2 不同分流方案联合颅骨修补治疗颅脑损伤减压术后交通性脑积水104例术后并发症发生率比较/例(%)

组别	例数	继发感染	血肿	引流管堵塞	分流不足或过度	癫痫	术后并发症发生率
A组	52	1(1.92)	0(0.00)	1(1.92)	1(1.93)	0(0.00)	3(5.77)
B组	52	3(5.77)	1(1.92)	4(7.69)	1(1.92)	1(1.93)	10(19.23)[a]

注:两组比较,[a]$\chi^2=4.31$,$P=0.04$

2.4 不同术式疗效和术后并发生发生率比较 VPS术和LPS术治疗颅脑损伤减压术后交通性脑积水疗效比较差异无统计学意义($P>0.05$);但LPS术术后并发症发生率显著低于VPS术($P<0.05$),见表3。

表3 不同分流方案联合颅骨修补治疗颅脑损伤减压术后交通性脑积水104例不同术式疗效和术后并发症比较

方案	例数	临床疗效				术后并发症					
		显效/例	有效/例	无效/例	总有效率/%	继发感染/例	血肿/例	引流管堵塞/例	分流不足或过度/例	癫痫/例	总发生率/%
VPS	63	37	15	11	82.54	4	1	4	2	1	15.87
LPS	41	30	6	5	87.80[a]	1	0	0	0	0	7.32[b]

注:两组比较,[a]$\chi^2=0.53$,$P=0.47$;[b]$\chi^2=5.89$,$P=0.01$;VPS为下腔-腹腔分流术,LPS为腰蛛网膜下腔-腹腔分流术

3 讨论

颅脑损伤颅内多存在大量血肿,临床推荐早期行开颅去骨瓣减压术治疗,以有效消除占位、降低异常增高颅内压;但病人术后较易发生创伤后脑积水,总体发生率自10%~50%不等,且呈逐年增高趋势[7]。对于颅脑损伤减压术后脑积水发生机制尚未完全阐明,大部分学者认为减压术导致蛛网膜颗粒损伤及气压所致脑脊液吸收循环障碍密切相关[8]。

以往颅脑损伤减压术后脑积水治疗采用内科保守疗法,如抑制脑脊液分泌、渗透性脱水、利尿、脑室外或腰池引流术等仅能在一定程度上缓解临床症状,难以从根本上消除病因[9];而显微内镜下第三脑室造瘘术被证实是脑室内非交通性脑积水治疗首选方案,但对于交通性脑积水疗效尚存在争议[10]。近年来临床报道证实[11],颅脑损伤减压术后脑积水病人能够通过分流联合颅骨修补方案获得明显预后改善;该术式能够有效促进大脑正常解剖形态和颅内压恢复,加快颅脑损伤后生理功能改善,延缓神经系统功能进一步损伤,从而达到更佳降低致死致残率效果;但目前针对颅脑损伤减压术后脑积水病人分流术和颅骨修补术是否应同期完成仍无明确定论。

国外部分学者认为[12],颅脑损伤减压术后脑积水病人应在术后3~6个月后完成颅骨修补或成形,如早期完成手术因硬脑膜或纤维结缔组织完整及致密性不佳,故皮下积液或感染发生风险较高;另一项临床研究显示[13],去骨瓣减压术后3个月是中枢神经系统功能恢复关键阶段,故应尽早完成颅骨成形或修补术。本次研究结果中B组近期治疗总有效率显著高于A组($P<0.05$);B组术后6个月GCS评分和GOS评分均显著优于A组、术前($P<0.05$),证实同期手术用于颅脑损伤减压术后脑积水病人治疗在控制病情进展和改善远期预后方面具有优势。已有研究显示[14],同期手术时病人首先接受LPS或VPS分流,保证膨出脑组织回落至骨窗平面下,进而促进颅腔原有形态恢复,从而为颅内压及脑部生理功能恢复奠定基础;同时同期手术还能够最大限度实现脑脊液引流,避免直接压迫脑组织,以获得满意手术侧减压效果,提高脑部血流灌注量;此外同期手术下硬膜组织还能够与修补所用钛网紧密贴合,从而避免包括皮下积液在内多种并发症发生。而B组术后并发症发生率显著高于A组($P<0.05$),则表明颅脑损伤减压术后脑积水病人行分期手术治疗更有助于预防多种并发症发生,安全性更值得认可,与以往报道结果相符[15],这与早期手术治疗后脑组织屏障完整性欠缺密切相关。此外VPS术和LPS术治疗颅脑损伤减压术后交通性脑积水疗效比较差异无统计学意义($P>0.05$);但LPS术术后并发症发生率显著低于VPS术($P<0.05$),符合国外学者既往报道结果[16],笔者认为这与LPS术无须穿刺脑组织、手术时间短及降低分流阻塞有关,故在无明显手术禁忌证时应首选LPS术。但在LPS应用过程中首先需严格把握手术适应证,其次术后需根据颅内压缓慢、分级调压。

综上所述,同期分流+颅骨修补方案治疗颅脑损伤减压术后交通性脑积水能够显著缓解相关临床症状,促进颅内压水平降低和脑室缩小,降低伤残等级,但分期手术则有助于预防术后并发症发生,同时采用LPS术更有助于提高手术安全性。

参考文献

[1] SONG J,LIU M,MO X,et al.Beneficial impact of early cranioplasty in patients with decompressive craniectomy:evidence from transcranial Doppler ultrasonography[J]. Acta Neurochirurg, 2014, 156(1):193-198.

[2] CHEN H,YUAN F,CHEN SW,et al.Predicting posttraumatic hydrocephalus:derivation and validation of a risk scoring system based on clinical characteristics[J].Metab Brain Dis,2017,32(5):1427-1435.

[3] CHEN Z,YANG Y,CHEN G,et al.Impact of ventriculoperitoneal shunting on chronic normal pressure hydrocephalus in consciousness rehabilitation[J].J Rehabil Med,2014,46(9):876-881.

[4] KOWALSKI RG,WEINTRAUB AH,RUBIN BA,et al.Impact of timing of ventriculoperitoneal shunt placement on outcome in posttraumatic hydrocephalus[J].J Neurosurg,2018,23(2):1-12.

[5] 中国医师协会神经外科医师分会.中国脑积水规范化治疗专家共识(2013版)[J].中华神经外科杂志,2013,29(6):634-637.

[6] 赵继宗.神经外科学[M].2版.北京:人民卫生出版社,2012:512-516.

[7] GREGORI M,FERNÁNDEZ-LEBORANS G,ÁLVARO ROURA,et al.Clinical analysis of individual treatment of post-traumatic hydrocephalus in 69 cases[J].Acta Zoologica,2015,34(5):262-268.

[8] LINNEMANN M,TIBæk M,KAMMERSGAARD LP.Hydrocephalus during rehabilitation following severe TBI. Relation to recovery, outcome, and length of stay[J].Neuro Rehabilitation,2014,35(4):755-761.
[9] DALLA BG, BARBERA C, BRAZZAROLA M, et al. Recovery from confabulation after normotensive hydrocephalus shunting[J]. Cortex,2016,75(6):82-86.
[10] PREUSS M,KUTSCHER A,WACHOWIAK R,et al.Adult long-term outcome of patients after congenital hydrocephalus shunt therapy[J].Childs Nerv Syst,2015,31(1):49-56.
[11] SCHENKER P,STIEGLITZ L,SICK B,et al.Normal pressure hydrocephalus shunt patients have fewer complications than other shunt patients[J].World Neurosurg,2018,110:e249-e257.DOI:10.1016/j.wneu.2017.10.151.
[12] ZIDAN I.Management of Adult Post-Traumatic Hydrocephalus[J]. J Head Trauma Rehab,2015,30(3):e67-e68.
[13] CHEN FM, WANG K, GAO L, et al. Lumboperitoneal shunts for the treatment of post-traumatic hydrocephalus [J]. Asian Pac J Trop Med,2018,11(2):162.
[14] XIN H,YUN S,JUN X,et al.Long-term outcomes after shunt implantation in patients with posttraumatic hydrocephalus and severe conscious disturbance[J].J Craniofac Surg,2014,25(4):1280-1283.
[15] QIAN Z,GAO L,WANG K,et al.Delayed catheter related intracranial hemorrhage following a ventriculo-peritoneal or ventriculo-atrial shunt in the hydrocephalus [J].World Neurosurgery,2017,107(5):846-852.
[16] SCHUSS P, BORGER V, GÜRESIR Á, et al. Cranioplasty and Ventriculoperitoneal Shunt Placement after Decompressive Craniectomy: Staged Surgery Is Associated with Fewer Postoperative Complications [J].World Neurosurgery,2015,84(4):1051-1054.

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球囊后扩张同时推注对比剂评估支架贴壁的血管内超声评价

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摘要:目的 采用血管内超声(Intravascular ultrasound,IVUS)评价球囊后扩张同时推注对比剂(Balloon Post-dilatation simultaneous injection contrast,BPIC)用以判断经皮冠状动脉介入治疗(PCI)时支架的贴壁状态。**方法** 选取2018年1月1日至2018年10月10日,徐州医科大学附属医院行经皮冠状动脉介入治疗术(Percutaneous coronary intervention,PCI)的原位病变冠心病病人30例。根据定量冠脉造影(Quantitative coronary angiography,QCA)结果指导支架、球囊的选择,在PCI术中于支架释放后由远及近采用多次BPIC方法判断支架贴壁,然后行IVUS检查评价支架释放后的贴壁情况;以BPIC时球囊远端无前向对比剂且无分支显影时为支架贴壁良好的指标。**结果** 30例病例,共计植入54枚支架,经过BPIC,支架最大直径大于支架型号而与后扩球囊型号相当[(3.54±0.66)比(3.21±0.55)mm,$P<0.05$;(3.54±0.66)比(3.59±0.75)mm,$P>0.05$],支架对称指数为0.86±0.05;QCA与IVUS对支架最大直径的测量存在显著线性相关($r=0.997$,$P=0.000$);50枚支架经BPIC与IVUS均判断为贴壁良好,BPIC与IVUS判断支架贴壁差异无统计学意义($\chi^2=2.25$,$P>0.05$)。**结论** BPIC方法判断支架贴壁可靠性高,支架扩张充分,在PCI术中采用该方法可以评估支架贴壁。

关键词:冠心病; 球囊扩张术/方法; 冠状血管造影术; 超声检查,介入性; 顺应性; 药物洗脱支架; 支架贴壁不良; 非顺应性球囊

The Intravascular ultrasound evaluation of balloon post-dilatation simultaneous injection contrast evaluating stent adherence

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Abstract:Objective Using Intravascular ultrasound (IVUS) to evaluate the reliability of balloon post-dilatation simultaneous injection contrast (BPIC) judging the stent attachment in percutaneous coronary intervention.**Methods** From January 1,2018 to October 10,2018,30 patients with coronary heart disease in situ underwent percutaneous coronary intervention (PCI) in the Affiliated Hospital of Xuzhou Medical University.The results of quantitative coronary angiography (QCA) were used to guide the choice of