

突发反常性脑疝治疗体会(附 2 例报告)

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摘要:目的 报告去骨瓣减压术后出现反常性脑疝 2 例, 结合文献复习, 提高对于反常性脑疝的认识。方法 收集 2015 年 6 月—2020 年 3 月山东第一医科大学第一附属医院神经外科发生 2 例去骨瓣减压术后后期突发反常性脑疝患者的资料。2 例均为高血压脑出血患者, 1 例为腰大池引流后, 另 1 例为脑室腹腔分流术后, 均出现减压皮瓣凹陷侧瞳孔散大, 意识障碍加重。结果 1 例经过腰穿紧急注入生理盐水 40 mL, 体位调整为头低脚高、头偏向颅骨缺损侧卧位, 及输液扩容约 4 h 解除脑疝, 意识状态好转; 另 1 例分流后患者同样经体位调整, 输液扩容治疗, 瞳孔于处理后约 10 h 恢复, 于恢复后第 2 天行颅骨修补治疗。结论 颅脑手术去骨瓣减压应早期修补, 合并脑积水者修补分流一期手术为佳; 过度引流及腰大池引流有反常性脑疝发生可能。出现反常性脑疝要及时正确诊断及治疗, 以期取得良好的效果。

关键词:反常性脑疝; 去骨瓣减压; 腰大池引流; 脑室腹腔分流; 体位

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Insights into the treatment of acute paradoxical brain herniation: An analysis of two patients

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Abstract: Objective To report two patients developing paradoxical brain herniation after decompressive craniectomy, and to improve our understanding of paradoxical brain herniation by reviewing the relevant literature. **Methods** Clinical data were collected from two patients developing acute paradoxical brain herniation after decompressive craniectomy in Department of Neurosurgery, The First Affiliated Hospital of Shandong First Medical University from June 2015 to March 2020. Both patients had hypertensive intracerebral hemorrhage. One patient was treated with lumbar cerebrospinal fluid drainage, while the other received ventriculoperitoneal shunt surgery. Both of them had mydriasis on the side of decompression flap and aggravated disturbance of consciousness after surgery. Patients with hypertensive intracerebral hemorrhage should take decompressive craniectomy with caution. **Results** One patient was urgently injected with 40 mL of saline through lumbar puncture in the Trendelenburg position with the head turned to the side with skull defect. Brain herniation was relieved by infusion dilatation for about 4 hours and patient's state of consciousness was improved. The other patient was also treated with posture adjustment and infusion dilatation after shunting. The pupils recovered at about 10 hours after treatment and cranioplasty was performed on the second day after recovery. **Conclusions** Cranioplasty should be performed early after decompressive craniectomy. Patients complicated by hydrocephalus need one-stage surgery with cranioplasty and shunting. Excessive drainage or lumbar cerebrospinal fluid drainage may cause paradoxical brain herniation. In order to achieve satisfactory outcomes, timely and accurate diagnosis and treatment are necessary for patients developing paradoxical brain herniation.

Key words: paradoxical brain herniation; decompressive craniectomy; lumbar cerebrospinal fluid drainage; ventriculoperitoneal shunt; trendelenburg position

突发反常性脑疝是一种发生于去骨瓣减压后少见的并发症, 易发生于腰大池持续外引流或脑室腹腔分流术后^[1-4]。反常性脑疝可以表现缓慢出现的症状, 也可表现短时间内突发瞳孔散大脑干受压

症状, 我们于 2015 年 6 月—2020 年 3 月治疗了 2 例高血压脑出血去骨瓣减压术后后期由于腰大池引流及脑室腹腔分流术引起的突发反常性脑疝病例。现结合文献对其临床表现、影像学特征及治疗

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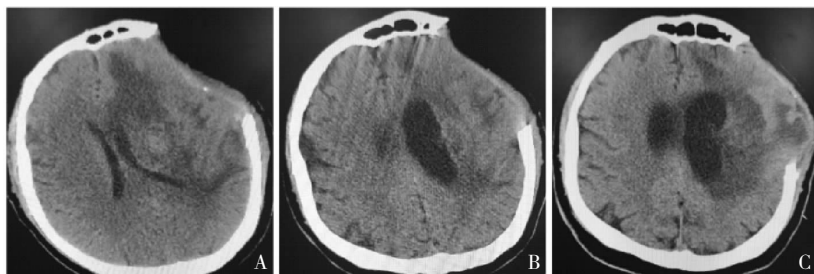
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方法进行分析。

1 病例资料

病例1。男,49岁,因“右侧肢体活动不灵7小时余”,以“左侧基底节区出血”收入院。予血肿钻孔引流术,术后再次出血发生脑疝,急诊行开颅血肿清除+去骨瓣减压术,1个月后发现颅内感染(脑脊液培养无细菌生长),予抗感染治疗,先后静脉滴注万古霉素1.0g,1次/12h,头孢曲松钠2.0g,1次/12h,利奈唑胺葡萄糖注射液0.6g,1次/12h,头孢哌酮钠舒巴坦钠3.0g,1次/12h,硫酸阿米卡星注射液0.6g,1次/12h。期间行腰大池置管引流,每日引流200~250mL,引流后皮瓣张力下降,凹陷,引流1周后,体温恢复正常,血常规检查结果正常,血降钙素原水平恢复正常,脑

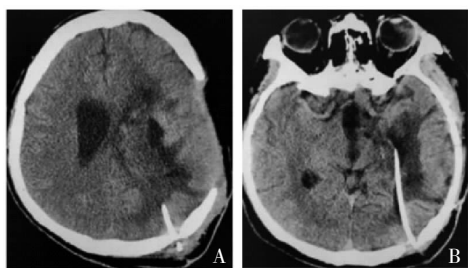
脊液白细胞及糖含量均在正常范围,给拔出腰大池引流。于拔出腰大池引流8d后再次出现体温反复,脑脊液示颅内感染未控制,降钙素原及血常规均提示炎症,遂再次给行腰大池引流,每天引流脑脊液约160~200mL,引流第2天突然出现左侧瞳孔散大,直径约7mm,但散大侧的皮瓣仍然凹陷,张力不高,意识障碍明显加重,颅脑CT(图1A)所示颅脑CT示中线右偏,左侧脑室受压向对侧移位。急给腰大池内注入生理盐水40mL,采取头低脚高位(Trendelenburg体位),头偏向颅骨缺损侧,扩容输液,皮瓣较前饱满,张力仍然不高。患者意识状态逐渐好转,散大瞳孔约4h后渐恢复,治疗后复查颅脑CT(图1B,1C)。现患者康复中。



A:反常性脑疝发生时,脑室受压变形,中线结构右移;B:经腰大池注液后4h,中线结构恢复;C:综合处理后24h,皮瓣稍膨出。

图1 病例1头颅CT资料

病例2。男,32岁,4个月前在外院行左侧基底节脑出血开颅血肿清除去骨瓣减压术,术后切口愈合不良,有炎性液体渗出,行腰大池引流,抗炎治疗,后转入我院,感染控制后,出现脑积水,给行左侧侧脑室-腹腔分流术,术后患者恢复可,患者意识朦胧,偶可遵嘱动作。室腹腔分流术后58d突发左侧瞳孔散大,直径约6mm,意识障碍加深。复查颅脑CT(图2A),予加强输液,头低脚高去骨瓣侧向下体位,瞳孔于10h后恢复,意识状态好转,于好转1周后给行颅骨修补(图2B)。恢复良好。



A:反常性脑疝发生时,左侧脑室受压变形,可见分流管。B:颅骨修补之后,脑室系统受压恢复,可见分流管。

图2 病例2头颅CT资料

2 讨论

反常性脑疝为去骨瓣减压水肿消退后出现的低颅压性脑疝,临床上有其特殊性,由于失去颅骨完整性的保护,受外界大气压、内部血流及脑脊液循环的影响,出现脑疝的症状体征,病情可进展迅速,处理不当,可危及生命。2012年吴晋等^[5]称之为“反常性脑疝”。

去骨瓣减压能使挽救脑疝患者生命的重要手段。然而去骨瓣减压后期处理不当可能出现反常性脑疝^[6],Alessandro Di Rienzo等给皮肤下陷综合征(SFS)分型,并反常性脑疝发生与去骨瓣过大、脑损伤过重、骨瓣距中线<2cm、二次扩大骨窗减压、脑脊液循环紊乱有关^[7]。一般认为反常性脑疝与失颅骨保护、大气压作用、脑脊液循环动力学改变,特别是过度引流等诱因的共同作用下,达到临界状态时,可以突发意识障碍加重,瞳孔散大脑疝表现。尽量避免易引起反常性脑疝的诱因。一般认为是大气压作用下^[8],颅内压过低,再有过度引流的诱因的基础上。正常颅腔内,脑的搏动与颅内

动、静脉搏动变化密切相关,但去骨瓣减压将会对此产生影响,大气压可作用于缺损的颅腔,使骨窗皮瓣凹陷,颅内皮层受挤压,产生一系列神经功能损害,脑脊液容量不足,皮瓣下沉综合征,甚至形成反常性脑疝。

反常性脑疝并不多见,故而漏诊误诊的可能性较大,以至于行反向治疗,加重病情甚至危及生命。诊断上主要是依据临床脑疝表现:去骨瓣侧瞳孔散大,有意识患者出现昏迷,皮瓣张力不高;颅脑 CT 示中线向去骨瓣对侧移位,脑室及中线结构受压等。其特点是皮瓣张力不高,颅骨缺损处皮瓣平坦或凹陷,同侧出现瞳孔散大的脑疝表现;一定是在去骨瓣减压术后恢复期,脑水肿已经消退以后;多发生在腰大池引流或脑室腹腔分流诱因的基础上^[9];多为大骨瓣减压术后。此 2 例患者去骨瓣均不大,但仍然出现了反常性脑疝,应与过度脑脊液引流有关。因此做上述操作时应仔细分析出现反常性脑疝的可能性。

颅内压增高多见于重型颅脑损伤,对高血压脑出血患者,绝大多数血肿穿刺引流^[8]或者清除血肿后骨瓣复位即可,仅部分患者需要去骨瓣减压。高血压脑出血多见于中老年人,血肿清除后脑压下降明显,多不需要去骨瓣减压,但仍有少部分病例特别是年轻患者由于颅内压增高时间过久,脑缺氧改变不得已行去骨瓣减压。去骨瓣减压后引起反常性脑疝者并不多见,该 2 例均为高血压脑出血去骨瓣减压术后,恢复期出现反常性脑疝,去除骨瓣并不大且皮瓣下陷并不严重,但皮瓣张力不高。

对去骨瓣减压恢复期,皮瓣下陷,明显张力不高,且有腰大池引流或脑室腹腔引流等诱因,出现凹陷皮瓣侧瞳孔散大,应首先考虑反常性脑疝发生,及时复查颅脑 CT 排除新发脑梗等情况。治疗应该头低脚高头偏向颅骨缺损侧体位,立即停止腰大池引流,并可鞘内注射生理盐水 30 ~ 40 mL,停用脱水药物;若为分流后,应调高分流阀;心功能允许情况下积极扩容治疗,多可回复;早期行颅骨修补恢复颅脑的封闭状态,若需要分流,分流最好与颅骨修补一期或者先行颅骨修补,部分病例颅骨修补后脑积水反而好转。

报告此 2 病例,旨在提高对该类并发症的认识。单侧去大骨瓣减压术对那些因脑卒中、颅脑外

伤及各种原因导致恶性颅高压所必要,但对高血压脑出血去骨瓣减压需慎重^[10],反常性脑疝是单侧去大骨瓣减压术后脑脊液过度引流后出现的罕见并发症,临床相对少见,易漏诊、误诊,治疗的不确定性较大,且其发生、进展相对迅速,临床症状通常较重且可危及生命;早期发现及时正确治疗非常重要。

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