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寰椎后弓半切除在高位上颈椎哑铃状神经鞘瘤手术的应用

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【摘要】 目的: 探讨寰椎后弓半切除在高位上颈椎哑铃状神经鞘瘤手术的可行性及临床疗效。方法: 回顾性分析 2005 年 1 月至 2018 年 12 月高位上颈椎哑铃状神经鞘瘤患者 13 例, 男 10 例, 女 3 例; 年龄 19~67 岁; 枕骨大孔至 C₁ 平面 4 例, C_{1,2} 平面 9 例。进行寰椎后弓半切除摘除肿瘤, 未内固定, 临床疗效采用疼痛视觉模拟评分 (visual analogue scale, VAS), 日本骨科协会 (Japanese Orthopaedic Association, JOA) 评分及美国脊髓损伤学会 (American Spinal Injury Association, ASIA) 分级等进行比较。结果: 13 例均顺利完成手术, 术中均未出现椎动脉损伤及脊髓损伤。13 例均随访 12 个月以上, 未发现局部复发, VAS 评分及 JOA 评分均较术前改善。术前 ASIA 分级: C 级 1 例, D 级 6 例, E 级 6 例; 末次随访 D 级 3 例, E 级 10 例。结论: 寰椎后弓半切除可 I 期切除高位上颈椎哑铃状神经鞘瘤, 短期临床疗效好, 无颈椎不稳等并发症。

【关键词】 颈寰椎; 神经鞘瘤; 外科手术

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开放科学 (资源服务) 标识码 (OSID):

Application of posterior arch of the atlas arch resection for high-level cervical dumbbell schwannoma surgery GU Shirong, ZHANG Ming, CHEN Bin-hui, SANG Pei-ming, and FANG Hai-ming. The Second Department of Orthopaedics, LI Huili Hospital of Ningbo Medical Center, Ningbo 315000, Zhejiang, China

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ABSTRACT Objective: To investigate the feasibility and clinical effect of hemi-resection of posterior arch of atlas in the upper cervical spinal dumbbell-shaped schwannomas. **Methods:** A retrospective analysis was performed on 13 patients with high-level cervical dumbbell schwannomas from January 2005 to December 2018, including 10 males and 3 females, aged 19 to 67 years old. The occipital foramen to the C₁ were 4 cases and 9 cases of C_{1,2}. Tumors were removed by posterior arch of the atlas resection without internal fixation. The clinical efficacy was evaluated by visual analogue pain scale (VAS), Japanese Orthopaedic Association (JOA) scores, and American Spinal Injury Association (ASIA) ratings. **Results:** The operation was successfully completed in 13 cases of this group. No vertebral artery injury or spinal cord injury occurred during the operation. All 13 patients were followed up for more than 12 months. No local recurrence was found. Both the VAS and the JOA score were significantly improved compared with those before surgery. The ASIA classification before operation was: 1 case of grade C, 6 cases of grade D, 6 cases of grade E; the latest follow-up was 3 cases of ASIA grade D and 10 cases of E. **Conclusion:** The posterior arch of the atlas hemisection can remove the upper cervical dumbbell schwannoma in one stage. The short-term clinical effect is good, and there are no complications such as cervical instability.

KEYWORDS Cervical atlas; Neurilemmoma; Surgical procedures, operative

哑铃状神经鞘瘤发生在枕骨大孔至 C_{1,2} 平面的上颈椎较为少见。此类患者早期无典型的脊髓压迫症状,较多患者因颈部肿块或神经根性刺激就诊,确诊时椎管内占位不大,椎管外占位较大。该类患者肿瘤摘除文献往往同时行枕颈融合或寰枢椎融合。但部分寰椎椎弓根肿瘤压迫吸收变异,置钉困难,部分学者采用前路手术,但置钉有脊髓血管损伤风险,枕颈融合率较高,损失部分颈部活动度^[1-2]。寰椎后弓解剖无重要韧带及关节,后弓半切除往往能获得较好的肿瘤暴露视野,在尽量不破坏寰椎周围稳定性的前提下,无须行内固定。自 2005 年 1 月至 2018 年 12 月收治该类患者 13 例,单纯行寰椎后弓半切除行肿瘤切除,未行前后路内固定,手术效果良好,现报告如下。

1 临床资料

纳入标准:枕颈部椎管内外哑铃状肿瘤,术后证实神经鞘瘤;临床及病理资料完整;术中未破坏过多骨性结构,未行内固定;术后行 12 个月以上的临床随访及影像学随访。**排除标准:**枕颈部其他类型肿瘤;椎管内肿瘤大部分在 C₂ 平面或低于 C₂ 平面;颈部有畸形或寰枢椎不稳。按以上标准纳入 13 例患者,男 10 例,女 3 例;年龄 19~67 岁;枕骨大孔至 C₁ 平面 4 例, C_{1,2} 平面 9 例。临床症状单纯颈部肿块、无明显不适 3 例,颈部酸胀疼痛不适 6 例,一侧肢体麻木乏力 3 例,双侧肢体麻木乏力 1 例。

2 治疗方法

全麻下取俯卧位,常规颈后部消毒铺巾,取枕颈部纵行切口,长约 10 cm,逐层切开皮肤、筋膜。沿肌间隙分离肌肉组织,暴露颅底至 C₂ 椎板上缘。将寰椎患侧椎弓用磨钻小心切除,视肿瘤位置及大小必要时将后颅窝下缘部分骨质及 C₂ 患侧椎板上缘磨除,充分暴露椎管内瘤体,再仔细分离颈部后方肌肉群内肿瘤。椎管外瘤体较大可膜下分块切除,椎管内瘤体向外牵引下小心行膜下摘除。彻底止血清洗术

野后逐层关闭切口,皮下置入橡皮引流管 1 根,术毕。

术毕患者取平卧位。适当糖皮质激素及营养神经处理,静滴抗生素 12 h,术后 2 d 拔除引流管,无明显脑脊液漏佩戴颈托下床活动,术后佩戴颈托 2 个月。

3 结果

随访采用门诊形式,按日本骨科协会(Japanese Orthopaedic Association, JOA, 总分 17 分)评分法,美国脊髓损伤学会(American Spinal Injury Association, ASIA)分级量表对患者的脊髓损伤程度进行评价及视觉模拟疼痛评分法(visual analogue scale, VAS, 总分 10 分)分别进行评分。

13 例均顺利完成手术,椎管内外肿瘤完整摘除。所有病例术后病理提示神经鞘瘤。手术时间 125~195 min,出血 100~300 ml。所有患者术后随访时间 12 个月以上,末次随访 13 例 VAS、JOA 较术前明显改善。术前 ASIA 分级:C 级 1 例,D 级 6 例,E 级 6 例;末次随访 D 级 3 例,E 级 10 例。13 例 JOA、VAS 评分及 ASIA 分级详见表 1。典型病例见图 1。

4 讨论

4.1 手术入路及术式的选择

12 例取后正中纵行切口,1 例椎旁肿块较大延伸较远行横行切口。Ahn 等^[3]发现后正中入路可较好显露脊髓背侧及后外侧肿瘤,如果切除一侧关节突关节,也能显示脊髓腹侧肿瘤。13 例肿瘤位于枕骨大孔至 C₂ 椎管中上缘水平,该部位较宽,故该部位肿瘤早期多无典型的脊髓压迫症状, MRI 可准确提示肿瘤的性质、大小、形态以及与周围结构的关系,是该部位椎管内肿瘤的最佳检查方法^[4-5]。患者影像往往表现椎管内外哑铃形肿瘤突出椎间孔并向椎管外延伸,椎管外肿瘤较大,较多患者单纯表现为枕颈部肿块就诊,椎管内肿瘤局限不大。所有患者行寰椎后弓 C_{1,2} 左右切除往往能较好暴露椎管内瘤体,根据肿瘤生长位置磨除颅底部分骨质或颈上半

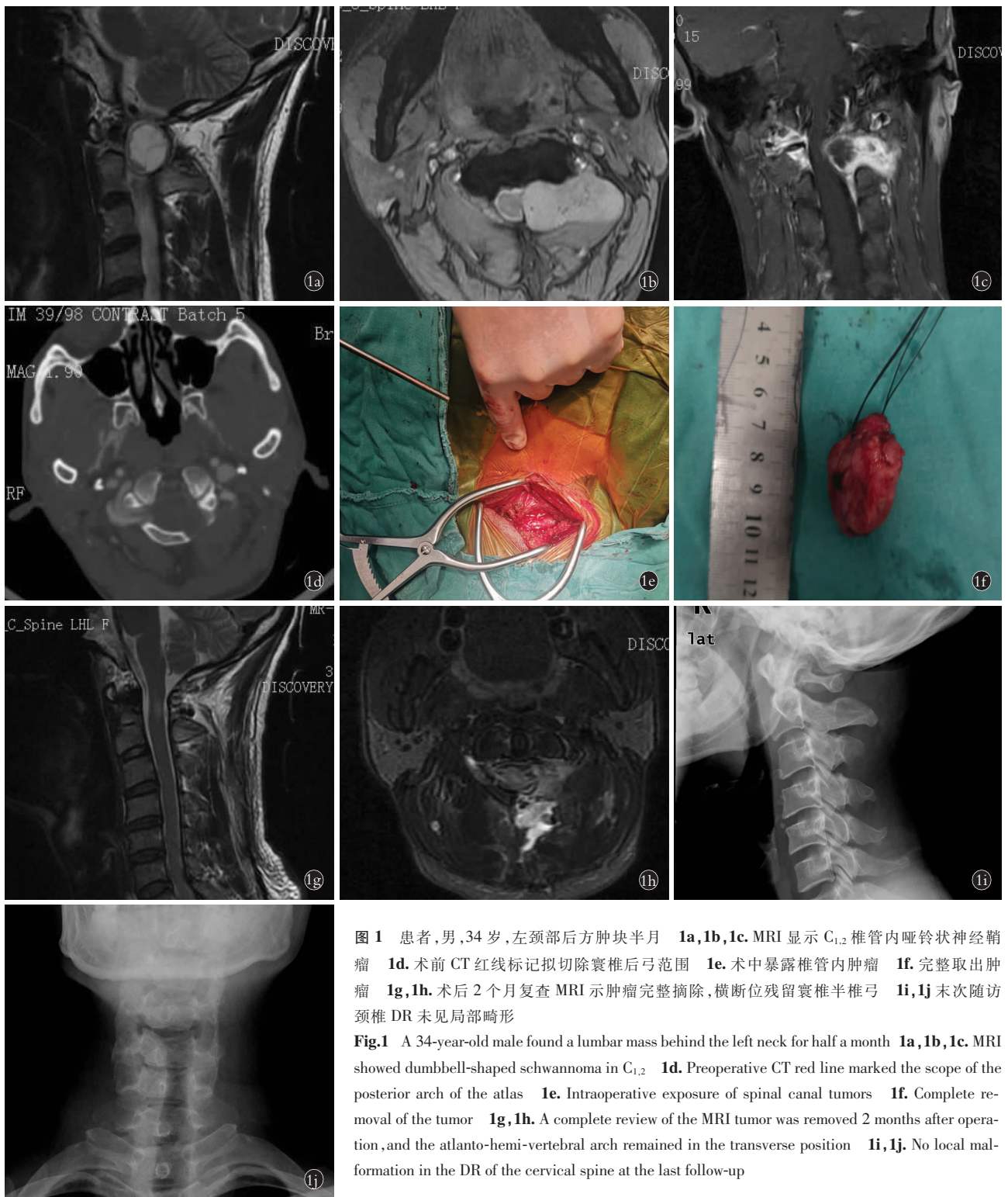


图 1 患者,男,34 岁,左颈部后方肿块半月 **1a,1b,1c.** MRI 显示 $C_{1,2}$ 椎管内哑铃状神经鞘瘤 **1d.** 术前 CT 红线标记拟切除寰椎后弓范围 **1e.** 术中暴露椎管内肿瘤 **1f.** 完整取出肿瘤 **1g,1h.** 术后 2 个月复查 MRI 示肿瘤完整摘除,横断位残留寰椎半椎弓 **1i,1j** 末次随访颈椎 DR 未见局部畸形

Fig.1 A 34-year-old male found a lumbar mass behind the left neck for half a month **1a,1b,1c.** MRI showed dumbbell-shaped schwannoma in $C_{1,2}$ **1d.** Preoperative CT red line marked the scope of the posterior arch of the atlas **1e.** Intraoperative exposure of spinal canal tumors **1f.** Complete removal of the tumor **1g,1h.** A complete review of the MRI tumor was removed 2 months after operation, and the atlanto-hemi-vertebral arch remained in the transverse position **1i,1j.** No local malformation in the DR of the cervical spine at the last follow-up

部椎板,不破坏 C_2 棘突及后方结构。而上颈椎肿瘤术后稳定性的重建目前较为普及,该区域内固定术式主要有寰枢椎融合及枕颈融合,寰枢椎融合内固定,其将螺钉置于寰枢椎椎弓根,可保存颈枕的活动度。李金泉等^[6]测量术后颈部侧屈、旋转、屈伸活动丢失率,研究发现颈枕融合上颈椎的活动丧失率明显高于寰枢椎融合,但该类患者由于瘤体挤压往往

伴有椎弓根变异或吸收置顶困难,需要做枕颈融合,患者需丢失颈部活动度。Yu 等^[7]则认为单侧椎板切除或关节突切除,可不行 I 期融合,但应严密随访,警惕潜在的脊柱侧凸和不稳,但对 >2 个关节突破坏或切除者,为安全起见,最好融合相应的颈椎。本组 13 例皆未行前后路内固定,并行平均 24.6 个月的随访,未发现患者寰枢椎脱位及半脱位等其他局部上

表 1 高位上颈椎哑铃状神经鞘瘤患者 13 例术前及末次随访 JOA、VAS 评分及 ASIA 分级

Tab.1 JOA, VAS scores and ASIA classification of 13 patients with high-level cervical dumbbell schwannoma before operation and at the latest follow-up

序号	性别	年龄 (岁)	JOA 评分(分)		VAS 评分(分)		ASIA 分级(级)	
			术前	末次随访	术前	末次随访	术前	末次随访
1	男	21	16	17	2	1	E	E
2	男	34	10	15	4	2	D	E
3	男	19	16	17	2	1	E	E
4	女	52	8	13	5	2	D	D
5	男	41	14	16	1	0	E	E
6	女	38	9	13	4	1	D	D
7	男	67	10	14	3	0	C	D
8	男	35	14	16	3	2	E	E
9	男	31	10	15	4	1	D	E
10	男	46	12	14	2	0	D	E
11	男	57	11	13	3	1	E	E
12	女	26	10	14	4	1	D	E
13	男	23	16	17	1	0	E	E

颈椎畸形改变,末次随访,颈部活动较好。所以针对高位的上颈椎哑铃状肿瘤,行寰椎半椎弓切除,必要时磨除颅底部分骨质及 C₂ 一侧上半椎板,未大量破坏其他骨性结构,可考虑不行内固定处理。但远期效果,需要进一步随访。

4.2 脊髓及椎动脉的保护

(1)上颈椎椎管内肿瘤占位往往脊髓缓冲空间受限,不可二次挤压造成脊髓损伤,切除 C₂ 后弓及 C₂ 上椎板不可使用较厚咬骨钳,本组患者全部使用高速磨钻仔细切除,避免造成脊髓损伤。(2)切除肿瘤前 0.5 h,静脉推注甲基强龙 80 mg。Sayer 等^[8]报道大剂量的激素可减轻局部脊髓水肿,改善微循环。(3)神经鞘瘤包膜完整,肿瘤可膜下切除,先游离椎管外瘤体,瘤体穿入双股 0 号丝线往椎间孔外上牵引,在一定张力下再仔细分离椎管内瘤体,13 例椎管内瘤体皆较易完整取出。此时应注意有无载瘤神经根粘连,不可强行牵拉,较难分离可行离断。哑铃形肿瘤多起源于颈神经后根,解剖上 C₁、C₂ 神经根多支配感觉,而 C₃ 以下的神经多支配颈部及双上肢的运动。Chowdhury 等^[9]报道 30 例上颈椎 C₁-C₃ 载瘤部分神经束离断,术后仅少数患者出现一过性感觉缺失或肌力下降。(4)术前 13 例皆行 CTA 检查,明确瘤体与椎动脉的关系,所有瘤体有挤压椎动脉而非包裹,摘除瘤体时行膜下顿性游离分离,可有效避免椎动脉损伤,椎动脉寰枢间部位椎管内外的哑铃形肿瘤与椎动脉关系紧密,可先行分离保护椎动

脉。3 例瘤体取出后出现静脉丛出血,给予止血纱布或明胶海绵压迫止血,明显的血管出血点电凝止血后,能有效止血。

总之,高位上颈椎哑铃状神经鞘瘤易造成颈髓及血管受压或破坏,潜在危害性极大,一经发现应及时行手术治疗。行寰椎半椎弓切除可有效暴露瘤体并行切除,无须内固定,可有效减少术中神经血管损伤并发症,保留颈椎活动度。患者手术时间短、恢复快、并发症少,整体临床效果满意。

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