·临床研究·

颅内动脉瘤相关动眼神经麻痹的影响因素

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【摘 要】 **目的** 探讨颅内动脉瘤相关动眼神经麻痹的影响因素。**方法** 回顾性研究162例颅内动脉瘤患者的临床资料。记录患者的性别、年龄、有无动眼神经麻痹、动眼神经麻痹程度、瘤体侧别、瘤体位置、瘤体直径、发病至就诊时间以及是否患高血压等全身疾病。应用SPSS 20.0统计软件对数据进行分析。分别采用单因素及多因素分析方法对动眼神经麻痹的影响因素进行统计分析,二分类资料做卡方检验,等级资料做非参数检验。应用受试者工作特征(ROC)曲线计算影响动眼神经麻痹的颅内动脉瘤直径的临界值,并行多因素logistic多元回归分析。**结果** 162例颅内动脉瘤患者中发生动眼神经麻痹患者40例(24.7%),其中完全动眼神经麻痹24例(14.8%),部分动眼神经麻痹16例(9.9%)。单因素分析结果显示,性别、瘤体位置和瘤体直径对颅内动脉瘤相关动眼神经麻痹发生的影响,差异有统计学意义($P<0.05$)。多因素分析显示,瘤体位置位于后交通动脉($OR=10.32$,$P<0.01$)、瘤体直径≥6 mm($OR=10.20$,$P<0.01$)为颅内动脉瘤相关动眼神经麻痹发生的影响因素。**结论** 颅内动脉瘤位置、直径是动眼神经麻痹发生的影响因素。

【关键词】 颅内动脉瘤;动眼神经麻痹;影响因素
【中图分类号】 R77 【文献标志码】 A 【DOI】 10.11915/j.issn.1671-5403.2020.04.069

Influencing factors of intracranial aneurysm related oculomotor nerve palsy

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【**Abstract**】 **Objective** To investigate the influencing factors of intracranial aneurysm related oculomotor nerve palsy (OMNP). **Methods** A retrospective study was used to analyze the clinical data of 162 patients with intracranial aneurysm. Their data were recorded, including gender, age, history of OMNP, degree of OMNP, information of the aneurysm (side, site, diameter, and time from symptom onset to treatment), and presence of high blood pressure and other systemic diseases. SPSS statistics 20.0 was used for data analysis. Univariate and multivariate analysis were employed for the analysis of the influencing factors of OMNP, chi-square test for analysis of binary data, and non-parametric test for analysis of ranked data. A receiver operating characteristic (ROC) curve was used to calculate the cut-off point of the diameter of intracranial aneurysm affecting OMNP. Multivariate logistic regression analysis was performed. **Results** In 162 cases of intracranial aneurysm, 40(24.7%) had OMNP, including 24(14.8%) of complete OMNP and 16(9.9%) of incomplete OMNP. The univariate analysis showed that gender, site and diameter of aneurysm affected occurrence of intracranial aneurysm-related OMNP, the difference being statistically significant ($P<0.05$). Multivariate logistic regression analysis showed that posterior communicating aneurysms ($OR=10.32$, $P<0.01$) and diameter ≥6 mm ($OR=10.20$, $P<0.01$) were influencing factors of OMNP. **Conclusion** The site and diameter of intracranial aneurysm are influencing factor of OMNP.

【**Key words**】 intracranial aneurysm; oculomotor nerve palsy; influencing factors
This work was supported by the National Natural Science Foundation of China (81970822).
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动眼神经麻痹(oculomotor nerve palsy,OMNP)是神经眼科常见病,表现为上睑下垂,外斜视,眼球向内、上、下方活动受限,瞳孔散大,对光反射、调节反射消失,双眼复视,严重时可有头晕、头痛等症状[1,2]。OMNP病因复杂,颅内动脉瘤(intracranial aneurysm,IA)为其中最危险、常见病因之一[3],最新

收稿日期:2019-07-22;**接受日期**:2019-11-01
基金项目:国家自然科学基金(81970822)
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报道显示 29.8%的 OMNP 是由 IA 引起的[4]。IA 是神经外科常见的脑血管疾病,发病率约为 5%[5]。IA 破裂率 6/10 万人~35.6/10 万人,一旦破裂,极易导致大面积蛛网膜下腔出血(subarachnoid hemorrhage,SAH),致死及致残率均较高[6-9]

文献报道显示早期 IA 缺乏特异性,症状轻微,诊断率较低,调查显示我国中老年人隐匿的未破裂 IA 总患病率高达 7%[10]。德国的未破裂 IA 患者已达 1.6×10^7 例[11]。对于诊断明确而未破裂的 IA 处理是神经外科领域最具有争议性的话题之一。尽管 IA 破裂出血的风险与瘤体大小的相关性还存在争议,但是多项研究表明后者与前者存在明显正相关。临床上对于微小、小型动脉瘤的处置原则尚不统一,相当部分 IA 患者因医疗条件差异及诊疗医师处置原则把握差异处于临床随访阶段[12]。然而,大部分研究提示处于后循环、后交通的 IA 发生破裂风险最高,需要早期处理[13]。

尽管已有文献报道 OMNP 和 IA 关系密切,但 IA 合并 OMNP 时患者瘤体重要参数如位置、大小等临床证据不足。本研究旨在探讨 IA 相关 OMNP 的影响因素,揭示两种疾病之间的密切相关性,同时为 IA 合并 OMNP 患者提供瘤体重要参数,为临床医师对疾病进行早期诊断和干预提供一定的临床证据。

1 对象与方法

1.1 研究对象

收集 162 例 IA 患者,其中男性 59 例,女性 103 例,年龄(58.57±11.36)岁。纳入标准:经影像学检查或手术确诊为 IA 患者。排除标准:存在其他颅内病变或神经系统疾病;存在或既往存在斜视、青光眼、眼底病、视神经病等眼病病史;由脑血管梗死或出血性疾病、糖尿病、颅内炎症、外伤、先天性等其他原因引起的 OMNP;甲状腺功能及免疫指标异常。

1.2 方法

回顾性研究 IA 相关 OMNP 的影响因素。所有病例均行全脑数字减影血管造影(digital subtraction angiography,DSA)检查,测得动脉瘤体直径(动脉瘤体直径是通过校正放大 DSA 图像之后,在图像上测得动脉瘤瘤颈平面中点至动脉瘤最远点的距离)[14]。记录符合纳入条件患者的性别、年龄、有无 OMNP、动眼神经麻痹程度、瘤体侧别、瘤体位置、瘤体直径、发病至就诊时间(指从 OMNP 症状出现到就诊的时间)、是否多发性动脉瘤、是否高血压和是否脑梗死等临床资料,进行统计学分析。

1.3 统计学处理

应用 SPSS 20.0 统计软件进行数据分析。对可能影响 OMNP 的因素及动眼神经麻痹程度的因素进行单因素分析,二分类资料做卡方检验,等级资料做非参数检验。应用 ROC 曲线计算影响 OMNP 的 IA 直径的临界值。进一步采用 logistic 多元回归进行多因素分析。$P<0.05$ 为差异有统计学意义。

2 结 果

2.1 IA 相关 OMNP 影响因素的单因素分析结果

对 IA 相关 OMNP 发生的可能影响因素作单因素分析(表 1),结果显示性别、瘤体位置、瘤体直径对 OMNP 发生的影响,差异有统计学意义($P<0.05$)。

2.2 ROC 曲线结果

用 ROC 曲线法对 IA 直径影响 OMNP 的临界值及其准确度进行分析得出:当瘤体直径为 5.95 mm(结合临床取直径为 6 mm)时准确度最高,为 OMNP 易发生的 IA 直径临界值。ROC 曲线下面积 0.80(95%*CI* 0.72~0.87)。

2.3 OMNP 发生影响因素的 logistic 多因素分析结果

将 OMNP 发生的可能影响因素做 logistic 回归分析,结果显示瘤体直径≥6 mm、瘤体位置位于后交通的动脉瘤是 IA 相关 OMNP 发生的影响因素($P<0.05$)。性别对 OMNP 发生的影响无统计学意义($P>0.05$;表 2)。

3 讨 论

动眼神经是第Ⅲ对颅神经,其从中脑的神经核团发出,在大脑后动脉和小脑上动脉之间穿行,与后交通动脉平行走行,再进入海绵窦[15]。毗邻于动眼神经的 IA 均可能引起神经麻痹。IA 破裂导致蛛网膜下腔出血的患者,起病急,进展快,15%发生严重残疾,30%~50%出现死亡[16]。

本研究结果显示,IA 位于后交通动脉是 OMNP 的影响因素。162 例 IA 患者中,发生 OMNP 患者 40 例,其中后交通动脉瘤最常见(27 例,占 67.5%),其次为颈内动脉海绵窦段动脉瘤(6 例,占 15.0%),Guresir 等[17]及 Golshani 等[18]研究认为,OMNP 最危险的原因之一是 IA,通常为后交通动脉瘤,其中 20%发生 OMNP。另有报道表明,在>50 岁 OMNP 患者中,6%的患者是由于 IA 压迫所致,最常见的瘤体位置位于后交通动脉和颈内动脉交界处[19]。本研究与已有的报道相吻合。究其原因,与动眼神经

表1 IA相关OMNP影响因素的单因素分析

Table 1 Univariate analysis of influencing factors of IA-related OMNP

Factor	Total (n=162)	Non-OMNP group (n=122)	OMNP group (n=40)	P value
Gender[n(%)]				0.03
Male	59(36)	51(42)	8(20)	
Female	103(63)	71(58)	32(80)	
Age(years, $\bar{x}\pm s$)	58.57±11.36	58.47±11.03	58.90±12.46	0.93
Diameter(mm, $\bar{x}\pm s$)	6.64±5.6	5.30±3.62	10.75±8.11	<0.01
Side[n(%)]				0.45
Left	93(57)	68(56)	25(63)	
Right	69(43)	54(44)	15(38)	
Site[n(%)]				<0.01
Posterior communicating	52(32)	25(21)	27(68)	
Anterior communicating	30(19)	30(25)	0(0)	
Ophthalmic artery	26(16)	25(21)	1(3)	
Cavernous sinus	14(9)	8(7)	6(15)	
Others	40(25)	34(28)	6(15)	
Multiple aneurysms[n(%)]	33(20)	24(20)	9(23)	0.70
Hypertension[n(%)]	72(44)	56(46)	16(40)	0.51
Cerebral infarction[n(%)]	16(10)	13(11)	3(8)	0.78
Time from symptom onset to treatment(d, $\bar{x}\pm s$)	164.79±620.88	186.96±705.63	97.18±200.82	0.66

IA: intracranial aneurysm; OMNP: oculomotor nerve palsy.

表2 IA相关OMNP发生影响因素的多因素logistic分析

Table 2 Multivariate logistic analysis of influencing factors of IA-related OMNP

Factor	Regression coefficient	P value	OR	95%CI
Diameter≥6 mm	2.32	<0.01	10.20	3.46-30.13
Site		<0.01		
Posterior communicating	2.33	<0.01	10.32	3.00-35.47
Anterior communicating	-18.79	1.00	0	-
Ophthalmic artery	-1.66	0.15	0.20	0.02-1.79
Cavernous sinus	1.10	0.16	3	0.66-13.69
Others		<0.01	1	
Constant	-3.03	<0.01	0.05	

IA: intracranial aneurysm; OMNP: oculomotor nerve palsy.

的解剖位置和结构密切相关:动眼神经走行于后交通动脉的下外侧,由该部位的蛛网膜紧密包绕。膨出的动脉瘤直接压迫邻近的动眼神经;动脉瘤持续性搏动对动眼神经产生慢性损伤;囊状未破裂的动脉瘤可以导致静脉淤血,动眼神经水肿,功能受损;动脉瘤破裂出血可以直接刺激动眼神经,或产生推移作用[20-23],OMNP是后交通动脉瘤濒临破裂的重要指针[24]。

IA直径是导致OMNP的原因之一[25]。本研究结果表明,IA直径是OMNP的影响因素,当瘤体直径≥6 mm时,更易发生OMNP。Ahn等[26]的研究认为,IA直径>5.7 mm可导致OMNP。另有研究认为,直径>7 mm的未破裂动脉瘤会导致OMNP[27]。瘤体直径对OMNP影响的可能原因:在瘤体位置等其他影响因素接近的情况下,瘤体越大对动眼神经产生的压迫作用越大,血管搏动产生的冲击力越大,静脉淤血、神经水肿程度越重或对动眼神经直接刺激及推移作用越明显,神经功能越容易受损伤。IA直径越大,发生破裂的风险越大。瘤体直径>10 mm者年破裂率达1%。另有研究者发现,小动脉瘤(直径<4 mm)也易发生破裂[28,29]。动脉瘤破裂危险因素还包括瘤体位置、遗传、是否吸烟等[30]。临床上接诊OMNP的患者应考虑到IA直径较大,发生破裂的概率增加、危险也相对增加的可能,应及早进行相关检查及治疗。

无特异症状的IA患者发生OMNP往往首先就诊于眼科,此类患者相对容易漏诊或误诊,从而导致病情延误,甚至威胁生命。结合文献报道,位于后交通支的IA较易发生破裂,此外,瘤体直径是IA破裂风险的重要参考因素[25,28,29]。基于本研究成果,眼科医师在临床上发现OMNP患者要高度提示患者IA可能性,而对于既往确诊IA患者合并OMNP更要引起足够重视,提醒患者及时就诊神经科,避免IA破裂而危及生命。

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(编辑: 门可)