

· 临床研究 ·

延长压迫时间可降低老年人股动脉穿刺点出血风险

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【摘要】目的 评价以Angioseal动脉闭合装置封闭老年人股动脉穿刺点后, 延长加压包扎时间降低出血并发症。**方法** 连续入选接受冠状动脉造影(CAG)和经皮冠状动脉介入治疗(PCI)的老年患者728例, 均以Angioseal封闭股动脉穿刺点, 上述患者随机分为常规治疗组(术后直腿平卧6h后可活动, 随后于2h内拆除加压包扎用弹力绷带)和延迟包扎组(直腿平卧6h后可活动, 但于术后20~24h拆除加压包扎用弹力绷带), 观察血管并发症及其时机。**结果** 两组患者发生股动脉穿刺点并发症发生率相比, 差异具有统计学意义。常规治疗组的穿刺点出血、假性动脉瘤等发生率明显高于延迟包扎组(7.42% vs 1.78%, $P = 0.001$)。其中出血并发症增高主要表现为拆除加压包扎敷料后的出血并发症增多(常规治疗组6.14%, 延迟包扎组0.59%, $P = 0.001$)。而因出血形成的假性动脉瘤发生率在常规治疗组明显增加(1.53% vs 0.00%, $P = 0.033$); 随着出血后局部压迫止血等措施的实施, 静脉血栓虽有增加(0.77% vs 0.30%, $P = 0.628$), 但差异无统计学意义。**结论** 股动脉穿刺点应用Angioseal后的出血并发症除与穿刺技术相关外, PCI术后的抗凝、抗血小板药物治疗也是重要原因。在这些强化抗凝、抗血小板药物治疗的患者中适当延长压迫时间, 减少早期活动是减少股动脉穿刺点出血并发症的重要手段。

【关键词】 老年人; 股动脉穿刺点; 出血风险

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Extending compression time reduces bleeding risk of femoral artery puncture point in elderly

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【Abstract】 Objective To evaluate the effect of prolonged compression bandaging time on bleeding Atotol of complications after closing the femoral artery puncture point with the Angioseal artery occluders in the elderly. **Methods** Totally 728 elderly patients were selected for coronary angiography and interventional treatment, whose femoral artery puncture points were closed with Angioseal. These patients were randomly divided into the conventional treatment group (keeping postoperative straight leg lie for 6 hours, and then elastic pressure bandage was removed within 2h) and delayed bandaging group (keeping postoperative straight leg lie for 6 hours, and then elastic pressure bandage was not removed until 20–24h). The vascular complications and occurrent time were observed. **Results** There was significant difference in femoral artery puncture site complications between two groups. The incidence of puncture site bleeding and pseudoaneurysm from conventional treatment group was significantly higher than that from delayed bandaging one (7.42% vs 1.78%, $P = 0.001$). And bleeding complications were manifested as increased hemorrhagic complications after removal of compression bandage (conventional treatment group, 6.14%, and delayed bandaging group, 0.59%, $P = 0.001$). The formation incidence of pseudoaneurysm due to hemorrhage increased significantly in the conventional treatment group (1.53% vs 0.00%, $P = 0.033$). Although incidence of venous thrombosis due to local pressed hemostasis after bleeding increased (0.77% vs 0.30%, $P = 0.628$), there was no statistical difference. **Conclusion** Bleeding complication of femoral artery puncture site with Angioseal not only related with the puncture technique, but also with PCI postoperative anticoagulation and antiplatelet treatment. Extending compression time and reducing the early activities appropriately are very important means of reducing femoral artery puncture site bleeding complications.

【Key words】 aged; femoral artery puncture point; bleeding risk

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经股动脉冠状动脉造影 (coronary arteriography, CAG) 及经皮冠状动脉介入治疗 (percutaneous coronary intervention, PCI) 术后动脉穿刺口的处理至关重要。封闭动脉穿刺点的方法有人工压迫止血和血管闭合装置等。近年来, 由于人工压迫止血有诸多局限和弊端^[1], 血管闭合装置的应用日趋广泛^[2], 较之手工压迫, 能明显降低穿刺点并发症发生概率, 但出血发生率仍然维持在1.5%~9%^[3], 老年患者的出血并发症更多。如何进一步降低经股动脉穿刺介入检查治疗患者的出血并发症, 仍然是介入医师面临的课题。

1 对象与方法

1.1 入选标准

(1) 诊断冠心病, 包括急性心肌梗死或不稳定型心绞痛, 拟行CAG和PCI者; (2) 为明确冠心病诊断或外科手术前评估拟行CAG检查者; (3) 股动脉造影局部无明显狭窄、斑块及严重扭曲, 符合Angioseal动脉闭合装置条件者; (4) 年龄>65岁; (5) 已签署知情同意书者; (6) 排除肝肾严重功能障碍、凝血功能障碍、合并感染、心源性休克和术中发生穿刺部位血肿等; 排除股动脉穿刺处明显动脉粥样硬化斑块, 管腔显著狭窄; 排除股动脉严重钙化、迂曲, 动脉多次穿刺合并血肿和穿刺点位于股动脉分叉处以远。

1.2 围介入期用药

(1) 术前常规使用阿司匹林 (aspirin)、氯吡格雷 (clopidogrel) 拮抗血小板功能, 他汀类药物抗动脉硬化; (2) 术中常规肝素抗凝 (CAG, 2500~3000IU, 冠状动脉支架治疗为100IU/kg); (3) 急诊、多支架、复杂冠状动脉病变患者在支架植入术后, 依病情使用低分子肝素钙或注射用替罗非班 (tirofiban; 均按说明书使用) 防支架内血栓^[4,5]。

1.3 分组和操作方法

(1) 采用随机对照研究。符合入选标准的病例随机分入常规治疗组 ($n=391$) 和延迟包扎组 ($n=337$)。使用Angioseal封闭动脉穿刺点后, 常规治疗组患者术后直腿平卧6h后可活动, 随后于2h内拆除加压包扎换用弹力绷带, 以无菌纱布无压力包扎穿刺点继续观察; 延迟包扎组患者术后直腿平卧6h后可活动, 但于术后20~24h拆除加压包扎换用弹力绷带, 以无菌纱布无压力包扎穿刺点继续观察。

(2) Angioseal的应用: 股动脉造影符合Angioseal使用条件, 经动脉鞘管插入导丝, 撤动脉鞘, 送入定位鞘至其出现喷血, 前送定位鞘1~2cm后拔出鞘芯, 送入内芯直至输送鞘完全插入, 回撤内芯释放可吸收锚板, 然后一起拔出内芯和定位鞘, 回送定位管使胶原海绵成型和锚板粘连, 抓住定位管和定位线保持拉力10s。观察穿刺点无出血, 剪断定位线后无菌加压包扎。(3) 加压包扎方法: 皮肤穿刺点用无菌纱布覆盖, 以4~6层无菌纱布和1个绷带卷覆盖股动脉穿刺点, 以弹力绷带十字交叉加压固定上述无菌敷料。(4) 血肿处理方法: 停用低分子肝素钙或替罗非班, 手工压迫股动脉穿刺点和血肿部位20~30min, 按前述加压包扎方式重新包扎穿刺点, 患者直腿平卧24h后, 拆除加压包扎换用弹力绷带。如有假性动脉瘤形成, 则在超声引导下用内注射凝血酶粉治疗, 必要时请血管外科行外科手术治疗。

(5) 在加压包扎期间, 鼓励患者在保持直腿平卧的同时收缩下肢肌肉、活动踝关节, 以预防下肢静脉血栓形成。

1.4 主要观察指标

血管并发症包括大血管并发症 (后腹膜出血、假性动脉瘤、动静脉瘘、血红蛋白下降>3g/dl或需要输血) 及其时机 (术后<6h出血为早期出血, >6h为晚期出血)、下肢血栓导致缺血和上述原因需要外科修补。

1.5 统计学处理

使用SPSS12.0统计软件处理数据。计量资料以 $\bar{x} \pm s$ 表示, 两组间均数比较采用 t 检验; 计数资料以百分率表示, 两组间比较采用 χ^2 检验。 $P < 0.05$ 表示差异有统计学意义。

2 结果

2.1 入选患者一般资料

2011年1月至2012年12月共入组解放军总医院海南分院心内科监护室, 符合要求病例728例, 年龄 (73.8 ± 7.2) 岁, 男性460例, 女性268例。其中常规治疗组平均年龄73.6岁, 延迟包扎组平均年龄73.9岁。两组患者临床基线特征 (如性别、年龄、血压等)、罹患冠心病类型/程度、CAG及PCI比例、合并高血压、糖尿病等差异无统计学意义 ($P > 0.05$; 表1)。

表1 两组患者一般资料比较
Table 1 General characteristics of all subjects in two groups [n(%)]

Item	Conventional treatment group (n = 391)	Delayed bandaging group (n = 337)	P
General information			
Male	255 (65.21)	205 (60.83)	0.591
Diagnosis			
STEMI	125 (31.97)	116 (34.42)	0.831
NSTEMI	67 (17.14)	56 (16.61)	0.922
OMI	8 (2.05)	5 (1.48)	0.780
SAP	6 (1.53)	10 (2.97)	0.216
UAP	158 (40.41)	124 (36.80)	0.951
Cardiomyopathy	7 (1.79)	6 (1.78)	1.000
Myocardial bridge	8 (2.05)	6 (1.78)	1.000
Normal	12 (3.07)	14 (4.15)	0.549
Hypertension	278 (71.10)	253 (75.07)	0.648
Hyperlipidemia	180 (46.04)	177 (52.52)	0.480
Renal inadequacy	88 (22.51)	94 (27.89)	0.103
Diabetes mellitus	96 (24.55)	87 (25.82)	0.804
Arrhythmia	25 (6.39)	31 (9.20)	0.212
Operation types			
CAG	145 (37.08)	139 (41.25)	0.483
PCI	246 (62.92)	198 (58.75)	0.587
Strengthening anticoagulant/antiplatelet	209 (53.45)	171 (50.74)	0.503

STEMI: ST-segment elevation myocardial infarction; NSTEMI: non-ST segment elevation myocardial infarction; OMI: old myocardial infarction; SAP: stable angina pectoris; UAP: unstable angina pectoris; CAG: coronary angiography; PCI: percutaneous coronary intervention

2.2 穿刺点并发症发生率

两组患者的股动脉穿刺点并发症发生率有明显差异。常规治疗组的穿刺点出血、假性动脉瘤等发生率明显高于延迟包扎组 ($P = 0.001$)。其中出血并发症增高主要表现为晚期出血增加,即PCI术后6h以后,拆除加压包扎敷料后的出血并发症增多 ($P = 0.001$)。而因出血形成的假性动脉瘤发生率在常规治疗组明显增加 ($P = 0.033$);随着出血后局部压迫止血等措施的实施,常规治疗组静脉血栓虽有增加,但差异无统计学意义 ($P = 0.628$;表2)。

2.3 抗凝/抗血小板治疗的影响

抗凝、抗血小板聚集治疗组出血率事件明显增多 ($P = 0.003$),尤其以晚期出血增多明显 ($P = 0.001$)。延迟包扎可以降低晚期出血的发生率(表3)。

3 讨论

冠心病PCI术后穿刺部位处理是围术期管理的重要组成部分,是影响患者住院时间和住院满意度的重要因素。随着各种股动脉穿刺点封堵器械的引入,传统的人工压迫止血并发症多发的特点有所改善^[6,7]。

表2 两组患者穿刺血管并发症比较
Table 2 Comparison of puncture vascular complications between two groups [n(%)]

Item	Conventional treatment group (n = 391)	Delayed bandaging group (n = 337)	P
Puncture point hemorrhage			
Total	29 (7.42)	6 (1.78)	0.001
Early stage	5 (1.28)	4 (1.19)	1.000
Later stage	24 (6.14)	2 (0.59)	0.001
Post CAG	4 (1.02)	3 (0.89)	1.000
Post PCI	25 (6.39)	3 (0.89)	0.003
Retroperitoneal hemorrhage	0 (0.00)	0 (0.00)	1.000
Other complications			
Venous thrombosis	3 (0.77)	1 (0.30)	0.628
Pseudoaneurysm	6 (1.53)	0 (0.00)	0.033

CAG: coronary angiography; PCI: percutaneous coronary intervention

表3 抗凝/抗血小板治疗的影响
Table 3 Effect of anticoagulation/antiplatelet treatment [n(%)]

Item	Conventional treatment group (n = 391)	Delayed bandaging group (n = 337)	P
Strengthening anticoagulant/antiplatelet			
Puncture point hemorrhage			
Total	23 (11.00)	5 (2.92)	0.003
Early stage	3 (1.44)	3 (1.75)	1.000
Later stage	20 (9.57)	2 (1.70)	0.001
Without strengthening anticoagulant/antiplatelet	182 (46.55)	166 (49.26)	0.503
Puncture point hemorrhage			
Total	6 (3.30)	1 (0.60)	0.123
Early stage	2 (1.10)	1 (0.60)	1.000
Later stage	4 (2.20)	0 (0.00)	0.124

部分医疗机构在PCI患者使用血管闭合器后6h或次日可以安排出院,说明血管闭合装置可有效替代人工压迫止血,疗效可靠。有临床试验结果表明,Angioseal与人工压迫相比不但可缩短止血时间,而且可显著降低局部血肿并发症的发生率。但也有相反资料提示,使用Angioseal的患者腹股沟血肿、出血、动静脉瘘、假性动脉瘤、下肢动脉血栓形成等的发生率并不低于手工压迫组^[8,9]。在老年患者中,由于动脉硬化等因素,穿刺点出血、血肿等并发症的发生率明显高于普通成年人^[10-13]。

本研究结果显示,Angioseal在PCI患者中,穿刺点并发症可发生于术后即刻的早期,也可发生于解除压迫和制动后的晚期。但更多发生于冠状动脉支架植入术后使用强化抗凝或抗血小板活性药物的患者。

早期出血的发生与穿刺的一次成功率、是否穿透

血管后壁、血管闭合器操作是否规范、加压包扎方法是否正确等因素有关。股动脉穿刺一次成功,避免多次试穿及透壁损伤,否则血管闭合装置只能封闭主要穿刺点,而遗留其他动脉壁损伤,造成术后出血。不管是血管闭合器的适应证选择不当,还是操作不规范(如线没拉紧、明胶海绵推送不到位等),都是潜在的导致出血的因素。加压包扎操作不当(如压迫点选择不当、压迫强度不够等)也可以造成出血。

晚期出血则更多与PCI术后使用强化抗凝、抗血小板活性药物治疗有关。多次穿刺、穿透动脉后壁等因素,也可能参与影响股动脉穿刺点晚期出血。随着常规加压包扎时间的延长,局部血管外血栓的形成,按常规解除加压包扎后,局部不会出血。PCI后强化抗凝治疗,则抑制局部凝血功能。早期解除加压包扎,可能导致局部出血事件发生。术后适当延长压迫时间、减少过度活动,是减少此类并发症的重要手段。

当然,压迫过度或时间过长,也可能增加下肢静脉血栓等事件发生。在本组病例中,静脉血栓多发生于穿刺点出血并发症后再次加压包扎止血的患者。这与第二次加压包扎,不敢使用抗凝治疗有关。

通过本组病例研究表明,股动脉穿刺点在应用Angioseal后的出血并发症,除与穿刺技术相关外,PCI术后使用抗凝、抗血小板药物治疗也是重要原因。在这些强化抗凝、抗血小板药物治疗的患者中适当延长压迫时间,减少早期活动是降低股动脉穿刺点出血并发症发生率的重要手段。

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