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剖宫产术围术期预防性应用抗生素的成本效果分析*

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摘要 目的:探讨剖宫产术围术期预防性应用抗生素的成本效果,为剖宫产手术提供有效、经济的抗生素应用方案。**方法:**选取我院近3年接诊的80例实施剖宫产产妇纳入本次研究,将其随机分为研究组和对照组,每组产妇40例。研究组在胎儿娩出断脐后立即静脉滴注头孢唑啉,术后不再应用抗生素,而对照组术后静脉滴注头孢唑啉,对比两组产妇的成本效果。**结果:**两组产妇术后体温(平均体温、最高体温)、体温恢复时间、住院时间和术后感染发生率对比均无统计学差异($P>0.05$);研究组成本效果明显低于对照组($P<0.05$)。**结论:**剖宫产术围术期预防性应用抗生素可达到良好的抗感染效果,选择头孢唑啉作为剖宫产手术围术期预防性抗菌药物,是一种有效、经济的方案,可避免围术期过度使用抗生素。

关键词:剖宫产术;围术期;预防性抗生素;成本效果

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Cost-effectiveness Analysis of Prophylactic Use of Antibiotics during Perioperative Period of Cesarean Section*

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ABSTRACT Objective: To explore the cost-effectiveness of prophylactic antibiotic use in perioperative period of cesarean section, to provide effective and economical antibiotic application program for cesarean section. **Methods:** 80 cases of parturients who received cesarean section in our hospital in recent three years were selected and randomly divided into study group and control group, 40 cases in each group. In study group, cefuroxime was intravenously dripped immediately after the delivery of the umbilical cord, and no antibiotics were used after the operation. In control group, cefuroxime was intravenously dripped after the operation, cost-effectiveness were compared between the two groups. **Results:** There was no significant difference between the two groups in body temperature (average body temperature, maximum body temperature), recovery time of body temperature, hospitalization time and incidence of postoperative infection ($P>0.05$); The cost and effect of the study group was significantly lower than that of the control group ($P<0.05$). **Conclusion:** Preventive use of antibiotics during the perioperative period of cesarean section can achieve good anti-infective effect. Choosing cefuroxime as a preventive antibiotic during the perioperative period of cesarean section is an effective and economical scheme, and excessive perioperative antibiotic use can be avoided.

Key words: Cesarean section; Perioperative period; Preventive antibiotics; Cost-effectiveness

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前言

剖宫产是一种处理分娩的常见方式,剖宫产手术是进入宫腔操作,直接通阴道,是一种清洁污染手术。虽然是在严格消毒和无菌的条件下进行的,但是仍然存在许多感染的危险因素,因此术后感染发生率比较高,合理应用抗菌药物以预防术后感

染是十分必要的^[1,2]。然而,随着抗生素的不断发展,围手术期预防性应该抗生素发生了很大改变。围手术期滥用抗生素降低治疗效果,致使耐药菌蔓延,导致细菌耐药株增加,不仅浪费了药也给患者造成了巨大的经济负担,而且增加治疗不良反应,易造成术后感染,甚至危及患者生命安全^[3,4]。选择有效、安全、经济的抗菌药物预防药物一直是临床研究关注的课题^[5]。抗生素

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的使用和感染预防效果已经有许多报道,但是对于药物经济学研究的报道较少。因此,本研究选取了我院近三年接受治疗的 80 例剖宫产产妇,分析了其围产期感染情况、效果经济状况,现将研究结果进行如下报道。

1 资料与方法

1.1 一般资料

选取在我院分娩的 80 例行剖宫产术的产妇为研究对象,

将其随机分为研究组和对照组,每组产妇 40 例,入选对象均符合剖宫产指征^[6,7];孕周 ≥ 37 周;术前生命体征及血常规检查均正常;对本研究药物无过敏;术前无感染征象;均知晓本研究内容,并签署知情同意书。排除标准:合并严重内科疾病患者;胎膜早破者;术前 3 天用过抗菌用药。两组产妇在年龄、入院时体质质量、平均手术时间及羊水污染情况如表 1 所示。上述资料经过统计学分析,无明显统计学差异($P>0.05$),符合临床对比研究标准。

表 1 两组产妇一般资料对比

Table 1 Comparison of the general data of parturients between the two groups

Groups	Case	Age	Weight(kg)	Operative time(min)	Amniotic fluid pollution(n)		
					Clear and bright	I degree	III degree
Research Group	40	29.1 $\pm$ 4.3	64.7 $\pm$ 4.5	41.3 $\pm$ 4.9	18	15	7
Control group	40	29.3 $\pm$ 4.1	65.0 $\pm$ 4.7	42.0 $\pm$ 4.7	17	14	9
t/x^2	-	0.453	0.623	0.552		0.823	
P	-	>0.05	>0.05	$P>0.05$		>0.05	

1.2 手术方法

两组入选产妇均由同一治疗组进行手术,行相同的手术方式,采取子宫下段剖宫手术,于耻骨上作横向切口,逐层进入腹部,取出胎儿,洗出羊水,将胎盘取出后,采取可吸收线进行皮下间断缝合。

1.2.1 研究组 研究组在胎儿娩出断脐后立即静脉滴注头孢呋辛,生产企业:华北制药河北华民药业有限责任公司,国药准字 H20040339,用法用量:可将 0.75 g 注射用头孢呋辛钠溶于 250 mL 生理盐水中进行静脉滴注,30 min 内完成滴注。术后不再应用抗生素。

1.2.2 对照组 对照组术后静脉滴注头孢呋辛,生产企业:华北制药河北华民药业有限责任公司,国药准字 H20040339,用法用量:可将 0.75 g 注射用头孢呋辛钠溶于 250 mL 生理盐水中进行静脉滴注,每天 2 次,连续用药 2 天。

1.3 评价标准

① 统计术后体温(平均体温、最高体温)、体温恢复时间、住院时间,并进行组间对比。② 本研究主要涉及预防用药,观察两组产妇生殖道感染、切口感染及泌尿系感染等,如果无上述感

染,则认定预防用药有效。③ 对比两组成本效果^[8,9],产生单位效果所需的成本,成本效果比(C/E)= 方案总成本 / 未感染率,药物治疗的总成本包括直接成本、隐性成本、间接成本,由于后这两项成本计算起来比较复杂、困难,所以本次研究只考虑直接成本,并且,本研究只计算抗菌药物成本。C/E 比值高低与单位效果所花费的成本呈正比例关系,比值越高,则成本越高^[9]。

1.4 统计学方法

采取统计学软件 SPSS19.0 对本研究所获得的数据进行分析,平均年龄、入院时体质质量、平均手术时间、术后平均温度、术后最高温度、体温恢复时间及住院时间采取平均数 $\pm$ 标准差($\bar{x}\pm s$)来表示,对结果进行 t 验证;羊水污染情况、术后感染、成本效果采取百分数来表示,对结果进行 χ^2 验证,如果组间对比数据差异值 $P<0.05$,则表示具有统计学意义。

2 结果

2.1 两组产妇术后体温、体温恢复时间、住院时间的对比

两组产妇术后体温(平均体温、最高体温)、体温恢复时间、住院时间对比均无统计学差异($P>0.05$),如表 2 所示。

表 2 两组产妇术后体温、体温恢复时间、住院时间对比($\bar{x}\pm s$)

Table 2 Comparison of the postoperative body temperature, body temperature recovery time and hospitalization time between two groups of women

Groups	Case	Postoperative body temperature($^{\circ}\text{C}$)		Body temperature recovery time(d)	Hospital stay(d)
		Mean body temperature	Maximum body temperature		
Research Group	40	37.21 $\pm$ 0.75	37.69 $\pm$ 0.35	1.82 $\pm$ 0.34	4.29 $\pm$ 0.75
Control group	40	37.30 $\pm$ 0.78	37.71 $\pm$ 0.38	1.79 $\pm$ 0.40	4.30 $\pm$ 0.73
t	-	0.567	0.319	0.401	0.987
P	-	>0.05	>0.05	>0.05	>0.05

2.2 两组产妇术后感染情况的对比

两组产妇术后感染发生率对比无统计学差异($P>0.05$),如表 3 所示。

2.3 两组产妇成本效果对比

研究组 C/E 明显低于对照组($P<0.05$), $\Delta C/\Delta E$ (增量成本)是指每增加一个效果增加成本的数量,相比于研究组治疗方

案,对照组每增加一个效果,则额外增加的成本是 70.65 元,如 表 4 所示。

表 3 两组产妇产后感染情况对比[例(%)]

Table 3 Comparison of postoperative infections between the two groups of women[n(%)]

Groups	Case	Genital tract infection	Incision infection	Urinary tract infection	Uninfected	Infection rate
Research Group	40	1(2.5)	1(2.5)	1(2.5)	37(92.5)	3(7.5)
Control group	40	1(2.5)	1(2.5)	0(0.0)	38(95.0)	2(5.0)
χ^2	-	-	-	-	-	0.982
P	-	-	-	-	-	>0.05

表 4 两组产妇成本效果对比

Table 4 Comparison of the cost effects between the two groups of maternal

Groups	Case	Total cost	Uninfected rate(%)	C/E	Δ C/ Δ E
Research Group	40	98.13	92.5	1.06	
Control group	40	274.75	95	2.89	70.65
t/χ^2	-	5.231	1.021	3.654	
P	-	<0.05	>0.05	<0.05	

3 讨论

一般情况下,健康女性生殖道内含有大量的微生物寄生,包括致病性、非致病性,如真菌、支原体、衣原体、需氧菌、厌氧菌等,维持女性生殖道菌群平衡^[10]。剖宫产手术切口邻近阴道、宫颈,在剖宫产手术后,病原微生物可行至切口,再加上手术应激反应、出血等因素影响^[11,12],产褥期产妇机体免疫力低下,生殖道的微生态环境发生变化后使得菌群失调,会导致非致病菌转化成致病菌,增加感染几率。而一旦发生感染,容易引发严重后果,甚至导致产妇死亡^[13]。因此,剖宫产术后采取预防性抗生素是必要举措。

目前,抗生素种类繁多,用法多种多样,若不合理应用抗菌药物,可能导致细菌耐药性,增加患者经济负担^[14]。因剖宫产手术涉及两类特殊群体(产妇、新生儿),对此,剖宫产围术期选择抗生素的时候,既要保证抗菌效果良好,还要最大程度降低产妇及新生儿负面作用^[15]。临床证实^[16,17]剖宫产手术后主要感染致病菌包括金黄色葡萄球菌、肠球菌、大肠埃希菌,头孢菌素抗菌谱广,血药浓度高,安全性高,常用于剖宫产围术期。

头孢呋辛是第二代头孢菌素,具有抗菌作用广、血药浓度高、适应范围广泛等特点,对剖宫产手术后常见的致病菌具有较高的抗菌作用,并且对敏感菌也具有一定的抗感染作用^[18,19]。手术实施是感染发生的危险时期,即切开手术切口到缝合关闭这段时间,致病菌入侵 4 小时内及时采取预防性抗生素预防感染尤为重要^[20]。对此,抗生素的选用及用药时机直接关系着预防感染是否成功。目前,临床围术期预防性应用抗生素是在作切口前 30 分钟予以用药,保证在机体发生细菌污染前,血清药物已达到有效浓度,但剖宫产手术区别于其他手术,需在术中中断脐后用药。静脉滴注头孢呋辛 30-40 分钟后,血液药物浓度达到最高峰,在胎儿分娩后立刻用药,能显著的抑制细菌的繁殖预防感染的发生,且术后无需继续用药^[21,22]。本研究结果显示两组产妇产后体温(平均体温、最高体温)、体温恢复时间、住

院时间及术后感染发生率对比均无统计学差异,提示剖宫产术围术期预防性应用抗生素和术后常规应用抗生素效果相当。

近几年,临床治疗除了关注治疗效果外,对药物的经济学价值也更加重视,合理应用有效资源,降低医疗费用,减轻医患双方负担^[23]。药物经济学是指医疗机构开展医疗服务过程中消耗劳动的货币表现^[24]。C/E 分析目的是评价所有备选治疗方案的有效性、安全性及经济性,综合平衡成本效果,在单位效果内寻求最低成本的方案,对比单位效果内花费的成本,如果 C/E 比值比较低,则说明具有重要的实施意义^[25,26]。通常成本增加时候,对应的效果也有一定增加,但是两者并不成正比例关系,如果成本增加一定程度后,效果不会再增加或逐渐减少^[27,28]。本研究中,研究组 C/E 明显低于对照组,提示剖宫产术围术期预防性应用抗生素具有良好的经济性,不需要术后继续用药,便可达到良好的抗感染效果。

总之,剖宫产术围术期预防性应用抗生素可达到良好的抗感染效果,选择头孢呋辛作为剖宫产手术围术期预防性抗菌药物是一种有效、经济的方案,可取得理想的效果,并且抗菌费用相对较少,避免围术期过度使用抗生素,从药物经济学角度分析该方案,其对节省医药资源具有重要意义。但是,本研究存在一定局限性,在选择入选对象中,未观察药物引发不良反应。另外,在研究条件受到一定限制,只考虑药物成本,成本计算未涉及间接成本、隐性成本,这样可能会对结果造成一定偏差^[29,30]。对此,在日后研究中,需加大样本量,跨越本次研究局限性,为临床合理、安全、经济应用抗生素预防剖宫产手术感染提供更有利、更全面的参考。

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