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多野照射、三维适形放疗与调强放疗对胃癌根治术患者 癌周围组织的影响*

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摘要 目的:探讨多野照射、三维适形放疗与调强放疗对胃癌根治术患者癌周围组织的影响。**方法:**选取收治的 103 例行胃癌根治术的患者,将所有患者随机分为甲乙丙三组,其中甲组患者 34 例,均采用多野照射治疗;而乙组患者也是 34 例,均使用三维适形放疗;丙组患者则有 35 例,均使用调强放疗。观察比较各组患者放疗后的上腹部症状改善情况,并且检测各组患者的肝功能和血常规以及胰淀粉酶等临床指标,比较各组患者经治疗后的复发率以及生存率。**结果:**甲组患者的近期疗效显著低于乙组患者($P < 0.05$),而乙组患者的近期疗效则明显低于丙组患者($P < 0.05$);三组患者的钡餐造影均有所改善,但是其组间比较差异不具有统计学意义($\chi^2=9.012, P > 0.05$)。甲组的不良反应率显著高于乙组和丙组(均 $P < 0.05$),并且各组患者的不良反应中血常规异常的发生率显著高于肝功能和胰脏功能的异常(均 $P < 0.05$),同时甲组患者出现放射性脊髓病的患者明显多于乙组($P < 0.05$),仅丙组患者未见放射性脊髓病。随访三年间三组患者第一年随访生存率无明显差异($P > 0.05$),而在第 2 年至第 3 年则三组患者的随访生存率有明显差异(均 $P < 0.05$),其中随访生存率以丙组患者最高,其次为乙组患者;另外随访三年间甲组患者的随访复发率显著高于乙组和丙组患者(均 $P < 0.05$),其复发率由低至高依次为丙组 < 乙组 < 甲组。**结论:**与多野照射治疗相比,三维适形放疗和调强放疗均能够更好地降低对胃癌周围组织的损伤和改善患者的临床症状,并且不良反应发生率低,对于降低复发率和提高生存率方面亦有不错的效果。

关键词:多野照射;三维适形放疗;胃癌根治术;胃癌;调强放疗

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Effects of Multiple Field Irradiation, Three Dimensional Conformal Radiation Therapy and Intensity Modulated Radiation Therapy on the Surrounding Tissues of Gastric Cancer*

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ABSTRACT Objective: To investigate the effects of multiple fields irradiation, three dimensional conformal radiotherapy and intensity modulated radiation therapy on the surrounding tissues of patients with gastric cancer. **Methods:** Selected from our hospital 103 patients with gastric cancer radical surgery. All the patients were randomly divided into three groups, including 34 cases of patients in group A using multiple fields irradiation therapy, 34 cases in group B using 3D conformal radiotherapy, and 35 cases in group C using intensity-modulated radiotherapy. Observe and compare the upper abdominal symptoms improvement after radiotherapy in each group, and detect clinical indexes in patients like liver function, blood routine and pancreatic amylase, compare the recurrence rate and survival rate after treatment. **Results:** The short-term curative effects of patients in group A was significantly lower than that of patients in group B ($P < 0.05$), and the short-term curative effects of the patients in group B was significantly lower than that of patients in group C ($P < 0.05$). The barium meal results of patients in three groups were improved, but there were no statistical differences between groups ($\chi^2=9.012, P > 0.05$). The adverse reaction rate was significantly higher in group A than in group B and group C ($P < 0.05$). And in each group, the incidence rate of abnormal blood routine was significantly higher than that of abnormal pancreas and liver function ($P < 0.05$). There were more patients in group A with first appeared radiation myelopathy than in group B ($P < 0.05$). No radioactive spinal cord disease was observed in patients of group C. During the three years of follow-up, the survival rate in the first year had no significant difference between three groups ($P > 0.05$). But, the survival rate was significantly different in the second and third year ($P < 0.05$), in which the survival rate was the highest in group C, and lowest in group A. Moreover, the recurrence rate was significantly higher in group A than in group B and group C during the three-year follow up (all $P < 0.05$), and also higher in group B than in group C. **Conclusion:** Compared with the treatment of multiple fields irradiation, three-dimensional conformal radiotherapy and intensity modulated radiotherapy can better reduce the

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gastric cancer surrounding tissue damage and adverse reactions occurrence rate, and improve clinical symptoms of patients. The two methods also had good results in reducing the recurrence rate and improving survival rate.

Key words: Multiple field irradiation; Three dimensional conformal radiotherapy; Radical operation of gastric cancer; Gastric cancer; Intensity modulated radiation therapy

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前言

临床治疗胃癌患者的首要选择是对患者实施手术治疗,但是有许多胃癌局部发展患者或者中晚期胃癌患者的身体状况不适合使用手术,所以放射性治疗便成为该部分患者的主要辅助治疗手段^[1,2]。由于近年来医疗技术的发展,临床放疗技术也随之大大提升^[3]。我院分析比较了多野照射、三维适形放疗与调强放疗对胃癌根治术患者胃癌周围组织的影响。

1 资料和方法

1.1 一般资料

选取我院于 2013 年 8 月至 2015 年 8 月期间收治的 103 例行胃癌根治术的患者,其中男性患者 62 例,女性患者 41 例,所有患者年龄均处于 27 至 58 岁之间,平均年龄为(42.1±7.3)岁。依据随机数字表法将所有患者随机分为甲乙丙三组,其中甲乙两组均为 34 例,丙组患者 35 例,各组患者一般资料比较差异不具有统计学意义(均 $P > 0.05$)。

1.2 纳入标准

患者肿瘤局部手术并未全部切除,存在残留癌灶符合放疗标准;所有患者均无姑息治疗史;所有患者均知情同意并自愿参与本次研究。

1.3 排除标准

不符合放射治疗标准;有姑息治疗史;存在心、肝、肾等功能异常;因各种原因无法配合研究进行。

1.4 方法

我院对甲组患者均采用瓦里安直线加速器进行前后左右多野照射治疗,乙组患者均采用共面野照射使用三维适形放

疗,丙组患者均采用瓦里安直线加速器逆向优化四个照射野的角度,使用调强放疗^[4]。

1.5 观察指标

在各组患者完成放疗前后 1 周实施钡餐造影检查,观察比较各组患者放疗后的上腹部症状改善情况,并且检测各组患者的肝功能和血常规以及胰淀粉酶等临床指标,比较各组患者经治疗后的复发率以及生存率。

1.6 统计学处理

对我院采集的 103 例行胃癌根治术患者临床资料用 SPSS19.0 软件进行统计分析,试验所得数据均用 $\bar{x} \pm s$ 形式表示,组间比较采用 t 检验,计数资料之间对比采用 χ^2 检验,以是否 $P < 0.05$ 来比较差异是否具有统计学意义。

2 结果

2.1 比较三组患者的近期疗效

根据我院对三组患者的临床症状改善程度进行统计分析,结果显示甲组患者的近期疗效显著低于乙组患者($P < 0.05$),而乙组患者的近期疗效则明显低于丙组患者($P < 0.05$);三组患者的钡餐造影均有所改善,但是其组间比较差异不具有统计学意义($\chi^2=9.012, P > 0.05$)(表 1)。

2.2 比较三组患者的不良反应情况

根据我院对三组患者的临床资料进行统计分析,结果显示甲组的不良反应率显著高于乙组和丙组(均 $P < 0.05$),并且各组患者的不良反应中血常规异常的发生率显著高于肝功能和胰脏功能的异常(均 $P < 0.05$),同时甲组患者出现放射性脊髓病的患者明显多于乙组($P < 0.05$),仅丙组患者未见放射性脊髓病(表 2)。

表 1 比较三组患者的近期疗效(例,%)

Table 1 Comparison of the short term curative effects between three groups (cases, %)

Groups	Clinical symptoms			Barium meal	
	Complete response	Improve	No change	Improve	Didn't improve
Group A(n=34)	8(23.5)	11(32.4)	15(44.1)	28(82.4)	6(17.6)
Group B(n=34)	10(29.4)	13(38.2)	11(32.4)	29(85.3)	5(14.7)
Group C(n=35)	17(48.6)	14(40.0)	4(11.4)	31(88.6)	4(11.4)
χ^2	5.427	7.592	6.023	9.012	9.324
P	0.029	0.054	0.031	0.063	0.076

表 2 比较三组患者的不良反应情况(例,%)

Table 2 Comparison of adverse reactions between three groups (cases, %)

Groups	White blood cells decline	Neutrophils lifts	Pancreatic enzyme abnormalities	Transaminase lifts	Radioactive myelopathy
Group A(n=34)	21(61.8)	17(50.0)	7(20.6)	12(35.3)	4(11.8)
Group B(n=34)	12(35.3)	10(29.4)	3(8.8)	8(23.5)	2(5.9)
Group C(n=35)	9(25.7)	7(20.0)	2(5.7)	5(14.3)	0(0.0)

2.3 比较三组患者的随访生存率和复发率情况

根据我院对三组患者的随访资料进行统计分析,结果显示随访三年间三组患者第一年随访生存率无明显差异 ($P > 0.05$),而在第2年至第3年则三组患者的随访生存率有明显

差异(均 $P < 0.05$),其中随访生存率以丙组患者最高,其次为乙组患者;另外随访三年间甲组患者的随访复发率显著高于乙组和丙组患者(均 $P < 0.05$),其复发率由低至高依次为丙组 < 乙组 < 甲组(表3)。

表3 比较三组患者的随访生存率和复发率情况(例,%)

Table 3 Comparison of three groups of patients followed for survival and relapse rate (cases, %)

Groups	Follow-up Survival rates			Follow-up recurrence rate		
	1 year	2 years	3 years	1 year	2 years	3 years
Group A(n=34)	29(85.3)	21(61.8)	15(44.1)	5(14.7)	9(26.5)	12(35.3)
Group B(n=34)	30(88.2)	25(73.5)	23(67.6)	2(5.9)	4(11.8)	5(14.7)
Group C(n=35)	33(94.3)	31(88.6)	30(85.7)	0(0.0)	2(5.7)	3(8.6)
χ^2	9.472	5.728	6.529	4.038	6.029	5.054
P	0.072	0.033	0.047	0.036	0.046	0.044

3 讨论

胃癌是我国威胁人类健康最严重的恶性肿瘤之一,其发病规律有着明显的地域差异,多发于西北及东部沿海地区^[5]。临床上除了地域环境外饮食生活因素以及幽门螺杆菌感染、癌前病变、遗传和基因等都是胃癌的致病因素^[6]。早期胃癌患者多无明显症状,仅少数人会有恶心呕吐等类似于上消化道溃疡等症状出现^[7]。目前胃癌的扩散和转移途径常有直接浸润和血行转移、腹膜种植转移以及淋巴转移等,手术切除胃癌组织是目前最主要的治疗方案^[8,9]。其中手术治疗又包括根治性手术和姑息性手术两种,但是由于许多局部胃癌进展患者或者胃癌中晚期患者不适宜使用手术治疗,所以放疗便成为临床局部辅助治疗的重要手段^[10,11]。随着近年来医疗技术的突飞猛进,三维适形放疗和多野照射以及调强放疗等治疗方案也在临床上得以广泛使用^[12,13]。为了分析探讨多野照射、三维适形放疗与调强放疗对胃癌根治术患者胃癌周围组织的影响,我院选取了103例行胃癌根治术的患者参与本次研究。

三维适形放疗技术(three dimensional conformal radiotherapy, 3D-CRT)是临床上一种精度较高的放射治疗,也是目前放射治疗之中的一种主流技术,绝大部分肿瘤均适用,最大程度地杀伤肿瘤细胞而又最好地保护了肿瘤周围的正常组织^[14,15]。而调强放疗(intensity modulated radiation therapy, IMRT)则是三维适形放疗要求辅助野内剂量强度依据一定要求进行调节的一种^[16]。胃癌根治术同时也叫做胃癌治愈性切除手术,能够将患者体内原发肿瘤和转移淋巴结以及受浸润的组织一并切除^[17]。但是事实上已经有浆膜侵犯的胃癌因为其肿瘤细胞有溢出种植的可能,所以即使对其进行胃癌根治术也只是相对根治术^[18]。所以胃癌根治术也分彻底根治术和相对根治术两种。根据我院对三组患者的临床症状改善程度进行统计分析,结果显示甲组患者的近期疗效显著低于乙组患者($P < 0.05$),而乙组患者的近期疗效则明显低于丙组患者($P < 0.05$);三组患者的钡餐造影均有所改善,但是其组间比较差异不具有统计学意义($\chi^2=9.012, P > 0.05$)。由此提示三组患者实施不同放射治疗后病情均有不同程度好转,但是使用三维适形放疗和调强放疗的临床疗效明显高于多野照射治疗。根据我院对三组患者的临床

资料进行统计分析,结果显示甲组的不良反应率显著高于乙组和丙组(均 $P < 0.05$),并且各组患者的不良反应中血常规异常的发生率显著高于肝功能和胰脏功能的异常(均 $P < 0.05$),同时甲组患者出现放射性脊髓病的患者明显多于乙组($P < 0.05$),仅丙组患者未见放射性脊髓病。由此提示三组患者运用不同放疗方式后均有不同程度的不良反应,其中以多野照射治疗的患者出现不良反应率最高,同时也表明了运用调强放疗治疗胃癌根治术后患者的安全性最高^[19]。根据我院对三组患者的随访资料进行统计分析,结果显示随访三年间三组患者第一年随访生存率无明显差异($P > 0.05$),而在第2年至第3年则三组患者的随访生存率有明显差异(均 $P < 0.05$),其中随访生存率以丙组患者最高,其次为乙组患者;另外随访三年间甲组患者的随访复发率显著高于乙组和丙组患者(均 $P < 0.05$),其复发率由低至高依次为丙组 < 乙组 < 甲组。对此我认为调强放疗治疗患者的安全性明显比其他两组患者高,在临床上的使用价值更大。

综上所述,与多野照射治疗相比,三维适形放疗和调强放疗均能够更好地降低对胃癌周围组织的损伤和改善患者的临床症状,并且不良反应发生率低,对于降低复发率和提高生存率方面亦有不错的效果。

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