# 直肠癌术前放疗VMAT与IMRT剂量学参数及急性不良反应分析

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**Title:** **Comparison of the dosimetry and the acute adverse reactions of same period chemotherapy of VMAT and IMRT preoperative radiotherapy for rectal cancer**

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**关键词:** 直肠癌; 容积旋转调强放疗; 调强放疗; 急性不良反应

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**摘要:** 目的：对直肠癌患者术前放疗容积旋转调强治疗（VMAT）与普通调强放射治疗（IMRT）的剂量学参数和急性不良反应进行比较分析，探讨VMAT在临床应用中的价值。方法：选取2015年1月至2018年1月在青海大学附属医院就诊的39例Ⅱ、Ⅲ期直肠癌术前放疗患者作为研究对象。根据治疗方式不同将其分为VMAT组（n=14例）和IMRT组（n=25例），两组均同期卡培他滨化疗（825 mg/m2，bid，5次/周）。比较两组患者的剂量学参数，并对两组患者治疗期间出现的急性不良反应的发生情况进行比较。结果：VMAT组靶区均匀性指数和适形度指数优于IMRT组（P=0.016、0.005），实际治疗时间仅为IMRT组的1/3；危及器官的剂量学中，VMAT组与IMRT组相比小肠V50、小肠Dmean的参数显著降低（P=0.007、0.012），而膀胱V30、股骨头V20的参数较IMRT组升高（P=0.000、0.005）；两组患者下消化道反应比较差异有统计学意义（P=0.038）。结论：VMAT可以增加靶区适形度、减少治疗时间，并可以降低小肠的高剂量区体积，且急性不良反应发生率及等级较低，与IMRT比较有着明显的优势。

**Abstract:** Objective：To comparison the dosimetry and the acute adverse reactions of same period chemotherapy of VMAT and IMRT preoperative radiotherapy for rectal cancer，and to explore the value of VMAT in clinical application.Methods： 39 cases of stage Ⅱ and Ⅲ rectal cancer with preoperative radiotherapy，receiving treatment in Affiliated Hospital of Qinghai University，from January 2015 to January 2018 were retrospectively analysed.According to different treatment methods，they were divided into group VMAT (n=14) and group IMRT (n=25).The two groups were treated with capecitabine (825 mg/m2，bid，5 times/week).The physical parameters and the occurrence of acute adverse reactions of the two groups of patients were compared.Results：The target homogeneity index and conformability index in group VMAT were better than those in group IMRT (P=0.016，0.005).The actual treatment time of group VMAT was only 1/3 in group IMRT.In the organs at risks，the expression of small intestine V50 and Dmean in the VMAT group was significantly lower than that in the IMRT group (P=0.007，0.012)，while the expression of V30 of the bladder and V20 of the femoral head was higher than that in the IMRT group(P=0.000，0.005).Conclusion：VMAT can increase the conformability index of the target area，reduce the actual time of treatment，and reduce the volume of the high dose area of the small intestine，and the incidence rate and grade of acute adverse reactions were lower than those of IMRT.

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