Analysis Of Ki-67 And Spontaneous Apoptotic Index In Paired Primary Rectal Adenocarcinomas And Their Liver Metastases

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**Background** Liver metastases from colorectal cancer are common. Understanding biological difference between primary and metastatic tumors may provide useful information that can be applied to improve therapeutic results in clinic. In this study, we investigated relative level of proliferation potential and apoptosis in paired primary rectal adenocarcinomas and their liver metastases within each individual.

**Methods** From a total of 22 rectal cancer patients with liver metastasis (9 metachronous, 13 synchronous), 44 specimens of paired primary and metastatic tumors were obtained for analysis. The level of spontaneous apoptosis was scored in hematoxylin and eosin-stained tissue section and Ki-67 was assessed by immunohistochemical stains. These were expressed as spontaneous apoptotic index (SAI: number of apoptotic nuclei per 1000 nuclei x 100%) or Ki-67 index(number of Ki-67 positive cellsper 1000 cells x 100%). Statistical significance of difference between primary and metastatic tumors was calculated using paired t-test.

**Results** Ki-67 index showed a decrease in 15 of 22 metastatic tumors compared to primary tumors. Mean Ki-67 index in primary and metastatic tumors were 23.9±3.4 and 16.4±2.5, respectively and this difference was significant (p=0.016). In contrast, SAI showed an increase in 9 and a decrease in 13 primary tumors compared to metastatic tumors. The Mean SAI of primary tumors (1.35±0.25) was not different from that of metastatic tumors (1.58±0.18) (p=0.3308). There was no correlation between Ki-67 or SAI and other clinicopathologic factors such as size and stage of the primary tumor, lymph node status, number of metastatic tumor, and time to metastasis.

**Conclusion** This study showed a significantly decreased Ki-67 index and no difference in SAI in metastatic liver tumors compared to their primary counterparts. The results in this study may partially explain the indolent behaviour of metastatic tumors from colorectal cancer and provide a rationale for active treatment of metastatic tumors in parallel with local treatment for primary disease.