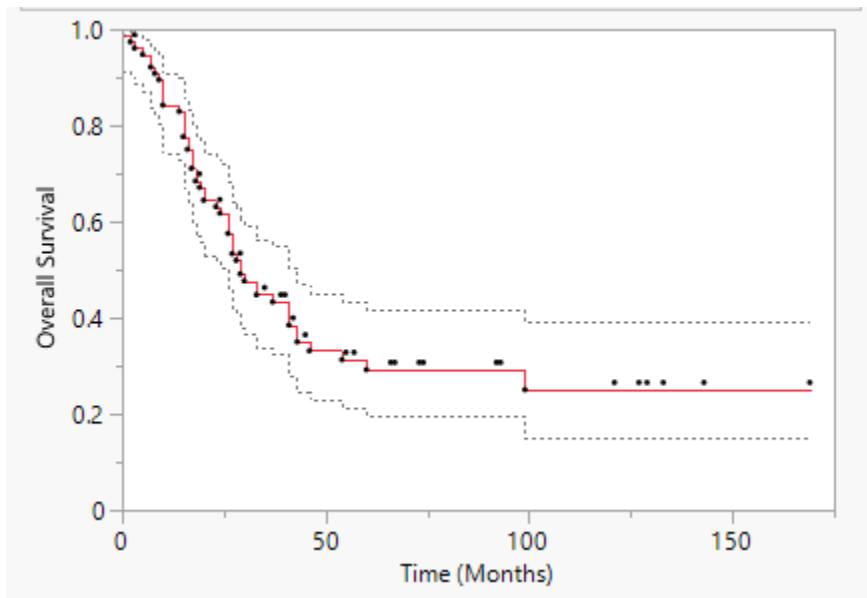


This research assessed prognostic factors of improved survival in 77 patients who had at least one resection of isolated pulmonary metastases (PM) from colorectal cancer. The research questions were focused on median survival and probability of surviving 5 years for all subjects who underwent a resection of PM. Survival time was measured in months to event (death). Patients were split into two groups pertaining to the number of resections occurred. One group had only 1 resected PM while the other group had more than 1 resected PM. Because we were interested in time-to-event, survival analysis was selected for data analysis. The assumptions that there were no changes in the diagnosis, treatment, or follow up procedures are assumed to be met. There were no data entry issues and no missing data. A Kaplan-Meier Curve was used to assess the survival for the full sample (see Figure #1). All statistical analyses were performed using JMP Pro 16, and all statistical tests were performed at $\alpha=0.05$ significance level. Of the 77 subjects who underwent resection, 51(66%) died during the follow up period. The mean time in months to death was 39.48 or approximately 3.29 years. However, this is likely a low estimate. As for the research question, the median time in months to death for all patients was 29 months or approximately 2.41 years. The probability of surviving 60 months (5 years) was 29.22% (95% CI: 18.03% to 40.41%). Overall, survival time with 50% of patients meeting the event criteria was at 28 months or 2.33 years.

The second research question addressed whether more than one resection had an impact on the patient's survival. Of the 77 patient's, 51(66.34%) died during follow up while 26(33.76%) remained alive. Because we were interested in the time-to-event, survival analysis was selected for the data analysis. The assumptions that there were no changes to diagnosis, treatment, or follow up procedures, and non-censored distributions were similar were assumed to have been met. There was no missing data. Kaplan-Meier Curves for both treatment groups was used to assess their respective survival curves (see Figure #2). The Log-Rank statistical test was used as we are interested in equal weight for each event across the study period. The two groups had statistically different survival rates [$\chi^2(1, n=77)=7.41; p=.0065$]. Those patients who had more than one resected PM had a median survival rate of 23 months (approximately 1.91 years) whereas those who had only one resected PM had a median survival time of 43 months or 3.58 years. The probability of surviving 60 months or 5 years was 19.35% for more than one resected PM group (CI: 5.43% to 33.27%) and 36.43% for the group with one resected PM (CI: 20.4% to 52.46%). In addition, the more than one resected PM group had 50% of deaths at 20 months or 1.66 years while the one resected PM group had 50% of deaths at 42 months or 3.5 years.

Based on the median survival, subjects who need more than one resection had a significantly lower survival time, approximately 22 months longer, than subjects who needed only one resection. This research emphasizes that multiple pulmonary metastases from colorectal cancer decreases survival time in patients.

Figure 1. Combined Kaplan-Meier Curve for Kidney Transplants (N=77)



Note: Gray Lines are 95% confident interval.

Figure 2. Kaplan-Meier Curves by Number by One Resected PM (N=46) and More than One Resected PM (N=31)

