

Second- and third-line chemotherapy in the treatment of malignant pleural mesothelioma

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Objectives

Second- and third-line chemotherapy is controversial in the treatment of malignant pleural mesothelioma (MPM). The purpose of this study is to evaluate the survival of patients who received first-, second-, and third-line chemotherapy in a cohort of patients with MPM treated with chemotherapy alone.

Methods

The study was conducted using data from 107 patients diagnosed between April 2009 and November 2020 at Eskisehir Osmangazi University Faculty of Medicine, Department of Chest Diseases, and prospectively followed up from diagnosis to end of life. Patients treated with cisplatin and pemetrexed in the first line of therapy. In the second and third lines of therapy, the same regimen was administered again if more than three months had elapsed since the end of treatment. In the other cases, platinum + gemcitabine, gemcitabine, vinorelbine, or a combination was used. Patients who had received second-line chemotherapy similarly received third-line chemotherapy. Median survival of patients was determined by the Kaplan-Meier method, and log-rank analysis was used for comparisons.

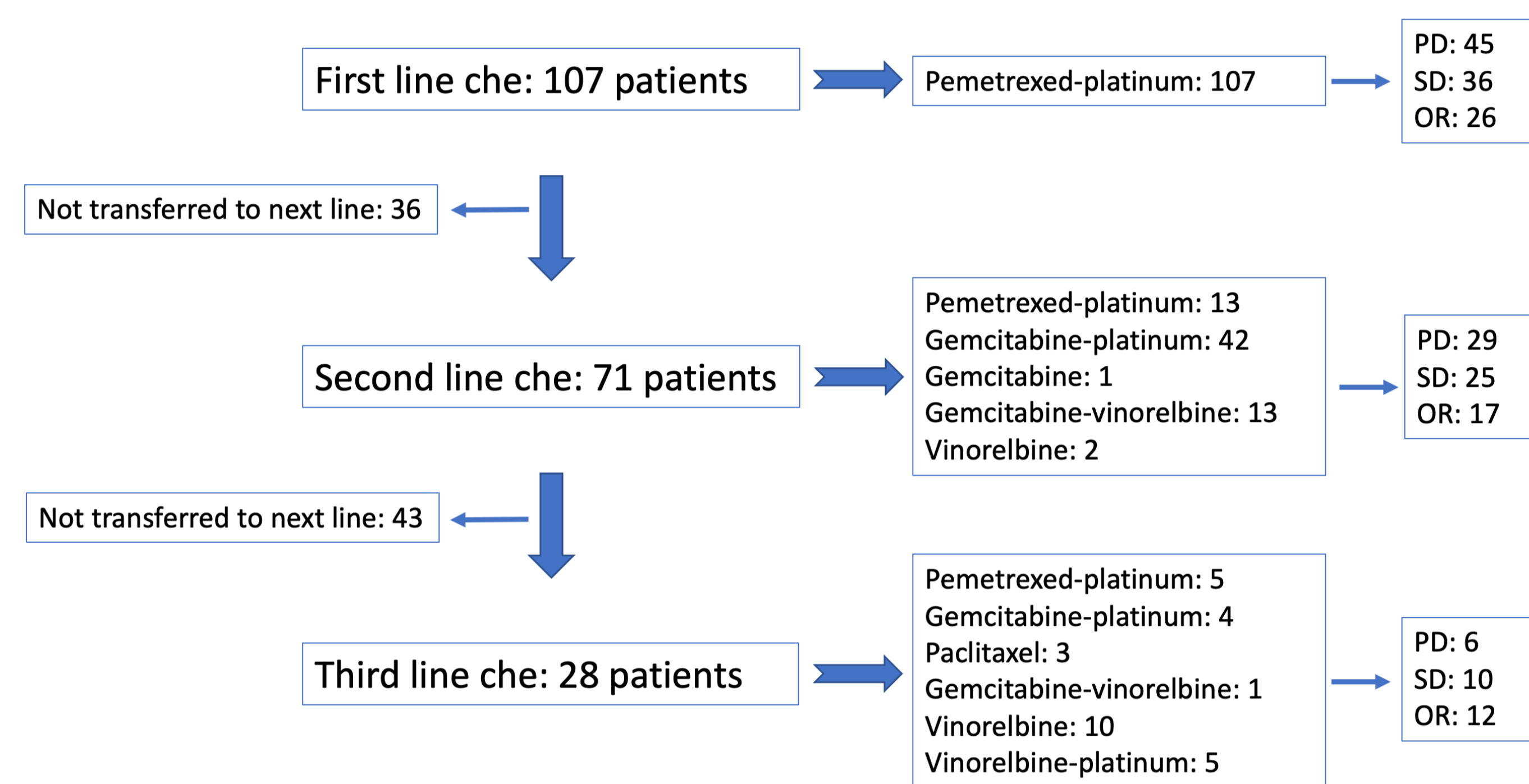


Figure 1. Flowchart of the patients.

PD: progressive disease; SD: stable disease; PD: progressive disease

Results

The clinical characteristics of the patients and their median survival according to chemotherapy line are shown in Table 1.

Table 1. Characteristics and survival according to chemotherapy lines of patients.

Characteristics	Patients (n=107)
Age, yrs	63.83±9.63 (30-81)
Sex, male	68 (63.6%)
Mesothelioma subtype	
Epithelioid	74 (69.2%)
Sarcomatoid	25 (23.4%)
Biphasic	8 (7.5%)
ECOG PS	
0	7 (6.5%)
1	96 (89.7%)
2	4 (3.7%)
TNM stage	
I	18 (16.7%)
II	5 (4.7%)
III	69 (64.6%)
IV	15 (14.0%)
Lines of chemotherapy, n	
One	107
Two	71
Three or more	28
BAP1	
Retained	38 (35.5%)
Lost	69 (64.5%)
Survival, median±SE (95% CI), months	12.0±1.3 (9.5-14.5)
Survival time*	
First line chemotherapy (n=107)	8.0±1.5 (5.1-10.9)
Second line chemotherapy (n=71)	12.0±0.8 (10.4-13.6)
Third line chemotherapy (n=28)	23.0±3.3 (16.5-29.5)

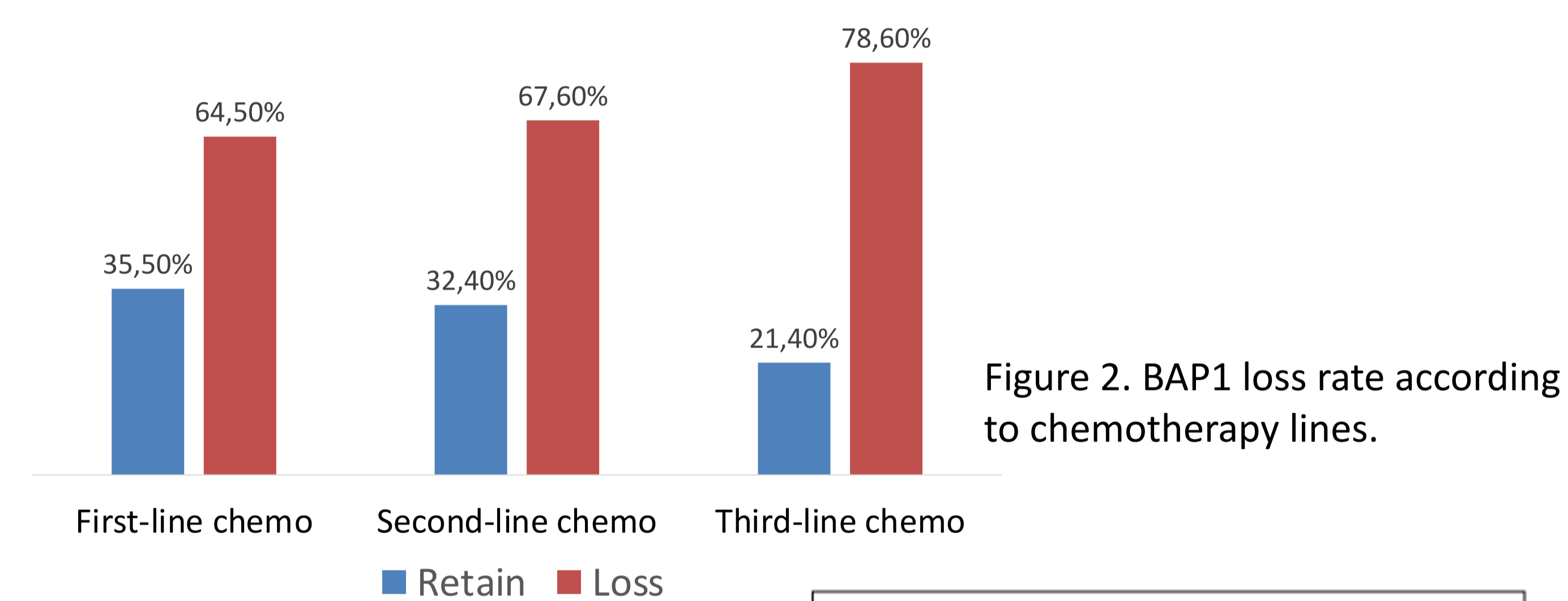


Figure 2. BAP1 loss rate according to chemotherapy lines.

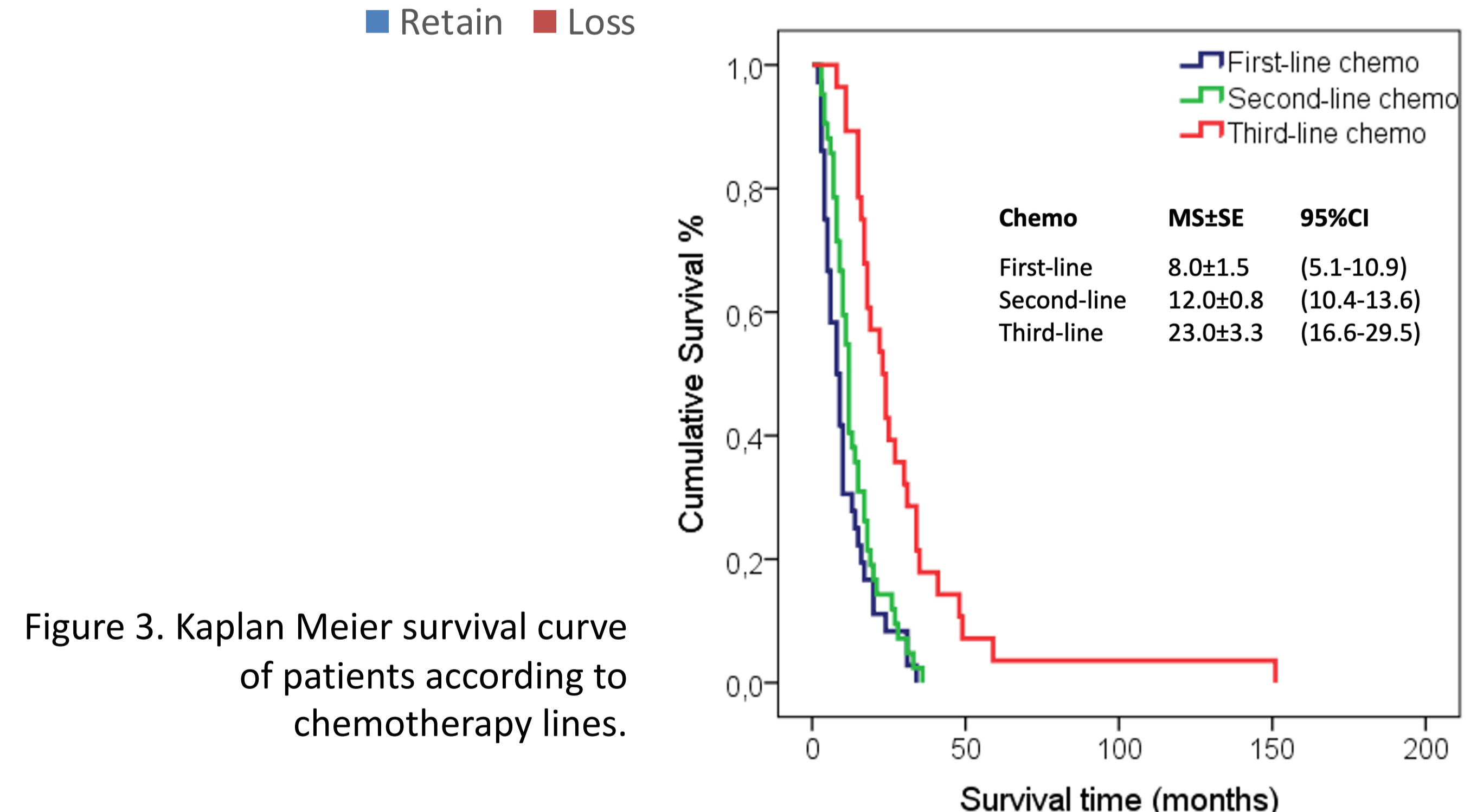


Figure 3. Kaplan Meier survival curve of patients according to chemotherapy lines.

There was a significant difference in survival between patients who received first-, second-, and third-line chemotherapy (log-rank=26.922; $p < 0.001$), but not in BAP1 loss rate.

Conclusion

Chemotherapy offers a limited life expectancy for MPM patients. However, some patients may respond well to repeated chemotherapy. In our patient group, second- and third-line chemotherapy prolonged survival in patients with good clinical performance status compared with patients who received single line chemotherapy. The discovery of predictive markers to identify patients who will respond to chemotherapy appears to be an important clinical need.