Target Therapy Treatment Patterns on Advanced GIST Patients: a National-Wide Cohort Study in Taiwan

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Abstract

Imatinib and sunitinib are two reimbursed targeted therapies for advanced Gastrointestinal Stromal Tumor (GIST) in Taiwan.

A national-wide study was performed to evaluate the targeted therapies in GIST treatment among Taiwanese population.

1186 advance GIST patients between January 2005 and December 2010 from the National Health Insurance Research Database (NHIRD) were selected to analyze the target therapy treatment patterns. Overall survival, recurrence-free survival, progression-free survival have been used to evaluate and compare on the efficiency of the usage of target therapy.

Background

Gastrointestinal stromal tumor (GIST) is a visceral sarcoma that arises from the gastrointestinal tract. Currently, imatinib (first-line) and sunitinib (second-line) are two reimbursed targeted therapies for advanced GIST in Taiwan. This national-wide study aimed to evaluate the real world data of targeted therapies in GIST treatment among Taiwanese population.

Methods and Materials

We conducted a nationwide retrospective cohort study based on data from the National Health Insurance Research Database (NHIRD) between January 2005 and December 2010. The NHIRD contains health care data from nearly 99% of the entire Taiwan population. From NHIRD, the patients who had ambulatory care and inpatient care between January 1, 2005 and December 31, 2011 with the following criteria: **A.** The patient's age must be over 18 years old when they started the first dose of target therapy. **B.** All the patients in this cohort must have ever received imatinib target therapy for advanced GIST (locally advanced/metastatic/recurrent GIST) between 2004 to 2011. **C.** The patient has a primary diagnosis including: (1) ICD coding with malignancy of stomach, duodenum, intestine, or connective tissue tumors. (2) First use of imatinib were during 2004 to 2011. (3) Patients without concomitant diagnosis of CML, RCC or dermatofibrosarcoma. We conducted by merging ambulatory care files, inpatient care files, and catastrophic illness patient original claim data into one. We estimated recurrence-free survival (RFS), progression-free survival (PFS), and overall survival (OS) probabilities with the Kaplan-Meier method. We did multivariate analysis using Cox proportional hazards regression models. The proportional hazards assumption was verified by tests of correlations with time and examination of residual plots, and only variables that were deemed statistically significant were included in the final Cox model. All times were calculated from the first treatment date of GIST to the last day of follow-up or death.

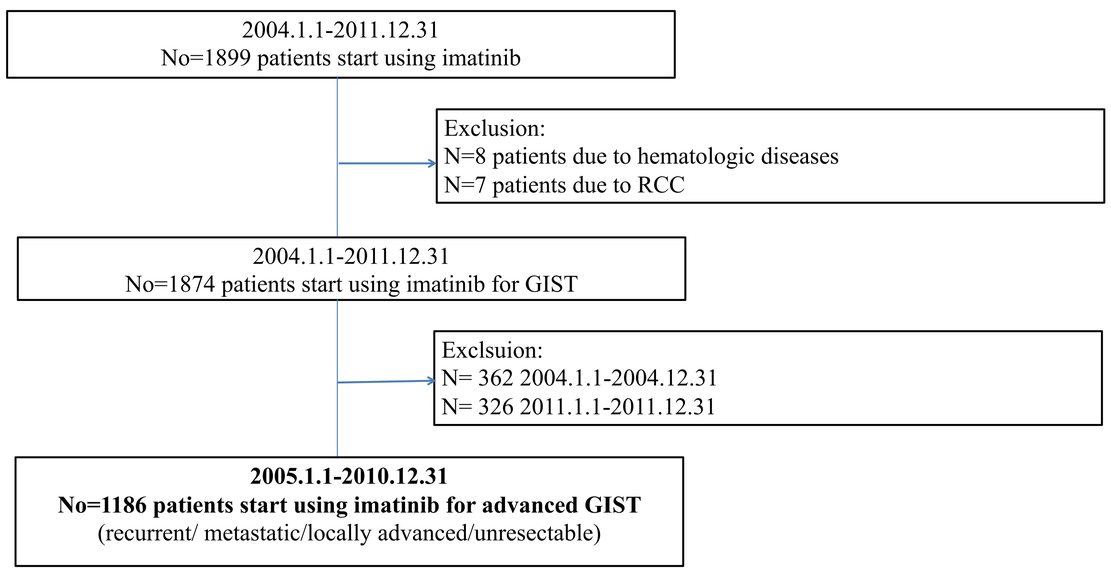

Figure 1. Selection of Study Patients.

Results and Discussion

With a median follow-up for surviving patients of 42 months, the median PFS of the cohort was 31 months since first-line imatinib. Cox proportional hazards multivariate analysis demonstrated directly switching to sunitnib was significant (hazard ratio: 0.77; 95% CI: 0.55-1.08; $p < 0.001$) prognostic factor for post-imatinib OS (59 months vs. 47 months).

The cohort was divided into three groups.

1. Group A (n=585) had complete surgical resection and began imatinib treatment once recurrence confirmed.
2. Group B (n=419) received imatinib therapy within 3 months after operation.
3. Group C (n=182) was patients who were considered as unsuitable for operation.

The median RFS of Group A was 16 months (95% CI 15-18) and the median OS after complete resection was 84 months. The cohort also demonstrated that PFS and OS of switching to sunitinib were longer than that with imatinib dose escalation after switching.

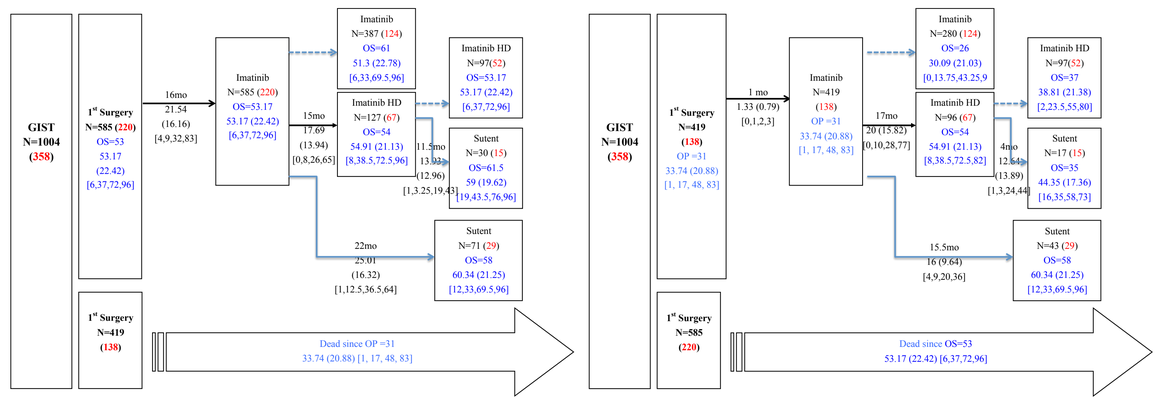

Figure 2. The treatment pattern of 585 patients in Group A.

Figure 3. The treatment pattern of 419 patients in Group B.

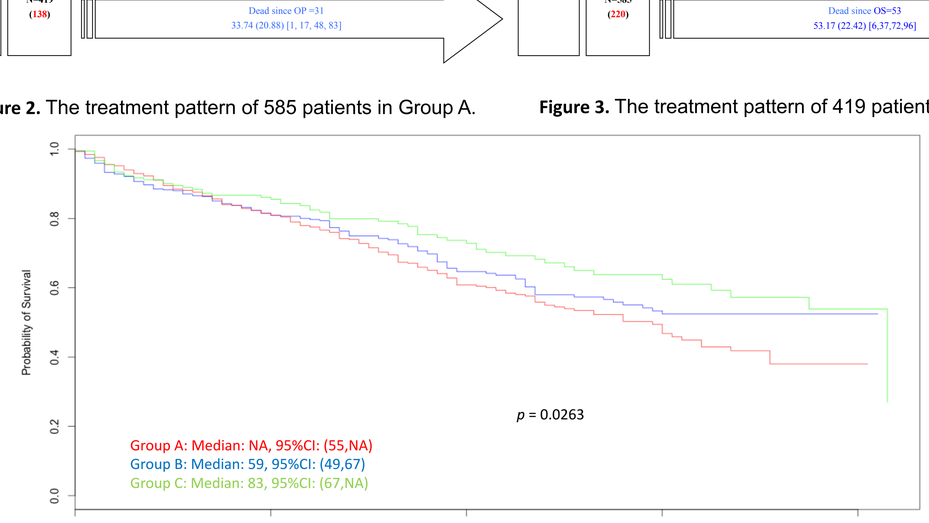

Figure 4. Kaplan-Meier **overall survival time (post-imatinib)** of patients in group A, B, and C, respectively.

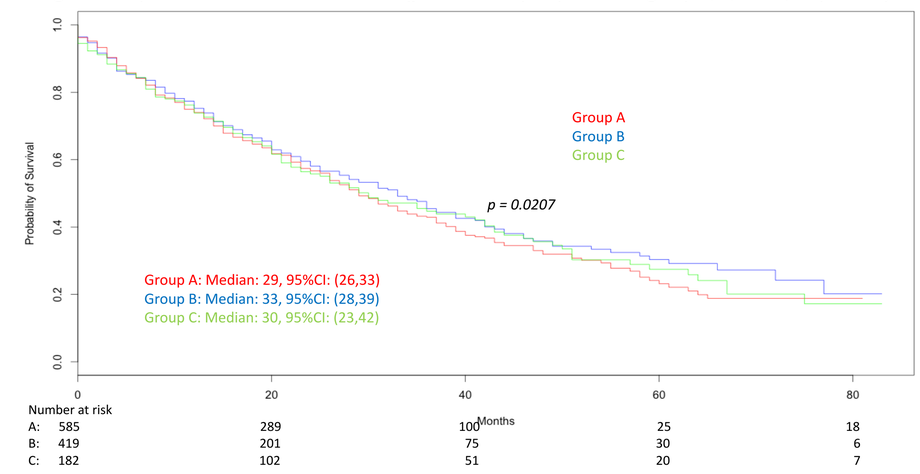

Figure 5. Kaplan-Meier **survival time after OP** in disease-progressed patients managed with imatinib elevation or directly switching to sunitinib

Conclusions

Taiwanese advanced GIST patients who failed first-line treatment still gained benefit from either imatinib dose escalation or a switch to sunitinib. Significant improvement in PFS using sunitnib directly as switch maintenance in advanced GIST.

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