RWD160

Time to treatment initiation and patient characteristics in newly diagnosed multiple myeloma patients with and without transplant: real-world evidence using 'big data' from England

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BACKGROUND

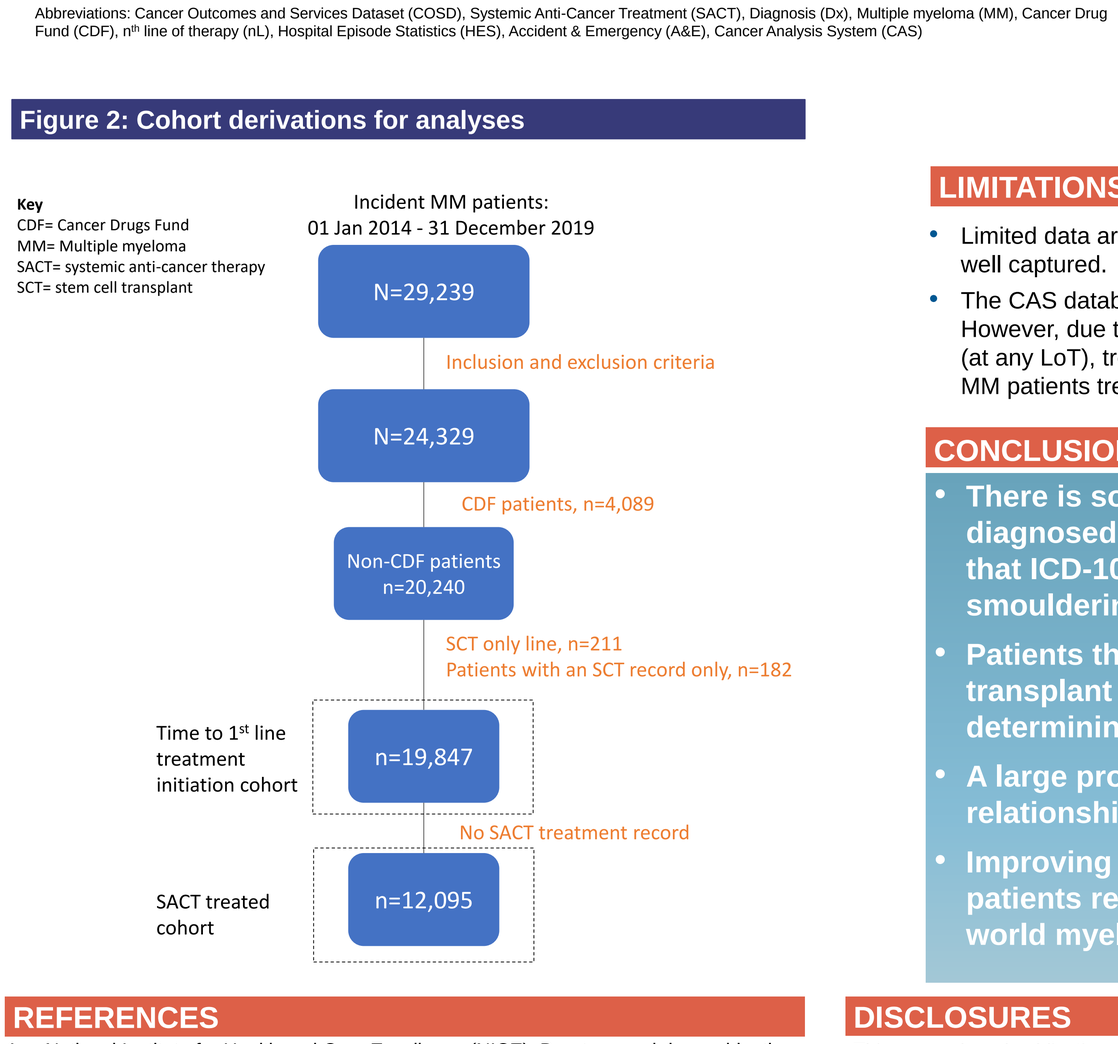
- Despite being a rare disease, multiple myeloma (MM) is the second most common haematologic malignancy in the UK. However, there is paucity of published evidence on the rapidly evolving treatment landscape and related outcomes for MM patients in the real-world clinical setting.
- The purpose of this study was to characterise patients with MM in England using a comprehensive database such as the Cancer Analysis System and understand the treatment patterns and outcomes of these patients.

METHODS

STUDY DESIGN

- A cohort of adult patients with an incident diagnosis of MM (ICD-10:C90.0) in England between 1st January 2014 to 31st December 2019 were identified retrospectively using the NHS England Cancer Analysis System (CAS), an individual level, population-wide database in England.
- To identify treatment progression- movement of a patient from one regimen to another and movement from one line of therapy to another- a new algorithm was developed.
- This algorithm was then applied to the Systemic anti-cancer therapy (SACT) data recorded between 1st January 2014 to 31st May 2021 to identify treatment data and subsequently, outcomes for patients that were diagnosed with MM (data not presented).
- Patients with myeloma can receive an autologous stem cell transplant (SCT), which is mostly used at diagnosis or early in the treatment journey in eligible patients. Receipt of an SCT can have an impact on subsequent treatment outcomes and overall survival, therefore, it is important to understand the characteristics and features of these patients.
- SCT status (any record vs. no record) during available follow up was determined by linking the SACT and Hospital Episode Statistics (HES) datasets. The linked dataset was available from 1st January 2014 until 31st March 2021 (Figure 1).

Figure 1: Study Design



Abbreviations: Cancer Outcomes and Services Dataset (COSD), Systemic Anti-Cancer Treatment (SACT), Diagnosis (Dx), Multiple myeloma (MM), Cancer Drug Fund (CDF), nth line of therapy (nL), Hospital Episode Statistics (HES), Accident & Emergency (A&E), Cancer Analysis System (CAS)

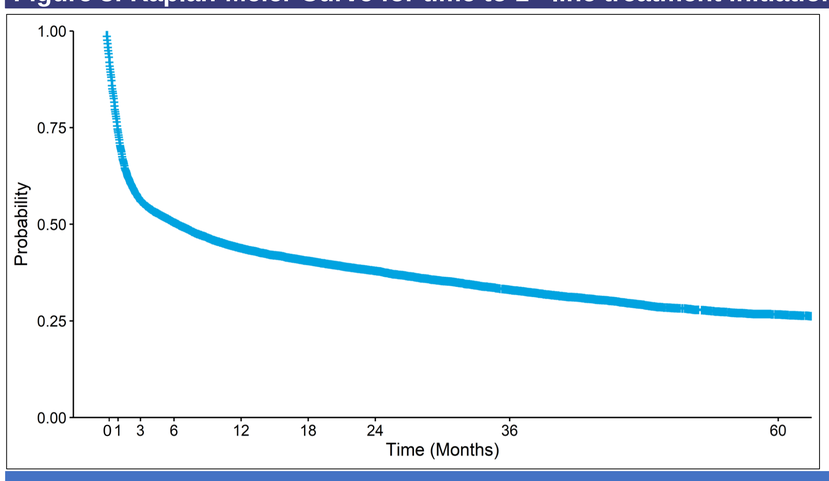
Figure 2: Cohort derivations for analyses

RESULTS

TIME TO 1ST LINE TREATMENT INITIATION

- 19,847 of diagnosed MM patients were included in the time to first line treatment initiation analysis after exclusions (patients who received at least 1 drug from the CDF (N= 4089), patients who had an SCT record but had no SACT records (N = 182) and those patients who had at least one SCT-only LoT but other SACT recorded (N = 211) (Figure 2)).

Figure 3: Kaplan-Meier Curve for time to 1st line treatment initiation from diagnosis



Time (months)	0	1	3	6	12	18	24	36	60
Number of patients at risk	19847	13660	9637	8171	6567	5641	4503	2816	994

- ***Approximately 26% of patients began 1st line treatment within one month of diagnosis, while 51% took longer than 6 months to begin treatment.***
- Probability of initiating 1st line treatment within 1 month of diagnosis record was 74% [95% CI: 74 - 75%].
- The median time to treatment initiation in the selected cohort for this analysis was 6.4 months [95% CI: 5.9 to 6.9 months].

CHARACTERISTICS OF PATIENTS WHO WERE TREATED WITH SYSTEMIC ANTI-CANCER THERAPIES BY TRANSPLANT STATUS

- For patients in the SACT-treated cohort (N = 12,095), demographic and clinical characteristics at initiation of 1st line treatment were obtained (Table 1), with results stratified by transplant status (i.e., SCT received vs. not received in any LoT).

Table 1: Demographic and clinical characteristics at initiation of 1st line for patients in the SACT-treated cohort, by transplant status

			Total	SCT received	SCT not received
Demographic	Total number of patients (%)		12,095	3,419 (28.3%)	8,676 (71.7%)
	Age at initiation of 1st line	Mean (SD)	70.7 (11.6)	59.6 (8.5)	75.0 (9.6)
		Median (Q1 - Q3)	72.0 (63.0 - 80.0)	61.0 (54.0 - 66.0)	76.0 (70.0 - 82.0)
	Weight (kg) at initiation of 1st line	N (%)	8,242 (68.1%)	352 (10.3)	7,890 (90.9)
		Mean (SD)	71.7 (22.9)	78.6 (23.2)	71.4 (22.9)
		Median (Q1 - Q3)	72.5 (61.3 - 84.6)	79.4 (67.8 - 92.0)	72.2 (61.0 - 84.1)
Clinical	ECOG score at initiation of 1st line N (%)	0	1,838 (15.2%)	154 (4.5%)	1684 (19.41)
		1	3,002 (24.8%)	101 (3.0%)	2901 (33.44)
		2	1,403 (11.6%)	24 (0.7%)	1379 (15.89)
		3	483 (4.0%)	**	**
		4	94 (0.8%)	*	**
		Missing/Unknown	5,275 (43.6%)	3,131 (91.6%)	2144 (24.71)
	Follow-up time from initiation of 1st line (months)	Mean (SD)	30.6 (21.7)	43.4 (20.3)	25.6 (20.1)
		Median (Q1 - Q3)	27.2 (13.0 - 44.2)	40.0 (27.4 - 58.1)	22.2 (8.3 - 37.8)

- ***3,419 patients (28.3%) received an SCT during the period of follow-up, while the remaining 8,676 (71.7%) did not.*** This is broadly in agreement with previously published data regarding proportion of patients in the UK eligible for transplant[1].
- ***Patients who received at least one SCT were generally younger*** (median age of 61.0 vs. 76.0 years) and had a substantially longer period of follow-up than those who did not receive an SCT (median follow-up 40.0 vs. 22.2 months).

LIMITATIONS

- Limited data are collected on patient characteristics in SACT therefore, features of patients that change during their disease course are not well captured.
- The CAS database covers ~95% of patients in England who receive SACT and can therefore, be considered broadly generalisable. However, due to the subsequent exclusion of patients from that total who received any treatment on the CDF register at the time of analysis (at any LoT), treatment patterns and outcomes observed for study participants would not be wholly representative of the general cohort of MM patients treated in England.

CONCLUSIONS

- **There is some delay for patients with MM to receive first treatment, however over half of patients diagnosed with MM receive treatment within 6 months. This data should be interpreted in the context that ICD-10 C90.0 code used to identify MM patients may have inadvertently pick up patients with smouldering MM who do not typically receive treatment in the UK and therefore may impact this result.**
- **Patients that received transplant at 1st line tended to be younger than those that did not receive a transplant during the study follow-up period, suggesting that age may be one of the key factors determining eligibility for transplant in the real-world.**
- **A large proportion of missing data on performance status makes any conclusions regarding the relationship between ECOG status and transplant eligibility challenging.**
- **Improving the variables and quality of data collected in SACT may facilitate better understanding of patients receiving treatment for MM in England and further contribute to our understanding of the real-world myeloma patient population**

REFERENCES

1. National Institute for Health and Care Excellence (NICE). Daratumumab in combination for untreated multiple myeloma when a stem cell transplant is suitable: Technology appraisal guidance [Internet]. 2022 Feb p. 30. Available from: https://www.nice.org.uk/guidance/ta763

DISCLOSURES

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