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Advancing Multiple Myeloma Treatment: A Systematic Review and Meta-Analysis of Cereblon E3 Ligase Modulatory Drugs (CELMoDs) Impact on Patient Outcomes

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INTRODUCTION

Multiple Myeloma (MM) is an incurable malignancy primarily treated with combination therapies. Cereblon E3 Ligase Modulatory Drugs (CELMoDs) are a new promising medication class aimed at improving outcomes. This systematic review and meta-analysis aims at exploring the outcomes of CELMoDs' in MM.

METHOD

Following PRISMA guidelines, Clinicaltrial.gov, PubMed, Cochrane Register of Controlled Trials were searched using MeSH terms and keywords 'Multiple Myeloma' AND 'CELMoDs' from the date of inception to January 31, 2024. Our literature search produced 20 articles and eight studies reporting outcomes of CELMoDs in MM were included after screening. Inter-study variance was calculated, and a pooled analysis was performed using the 'meta' package by Schwarzer et al. in the R programming language (version 4.16-2)

RESULTS

- A total of 292 patients from three studies were included for this systematic review and metaanalysis.
- The included studies were phase I 1(12.5%), phase I/II 6(75%) and phase II 1(12.5%).
- The median age of the included patients was 66 (57-67) years and 55% (120/271) were male.
- Mezigdomide (176/350), Iberdomide (172/350) and Avadomide (2/350) were the used CELMoDs.
- Neutropenia was the most common adverse effect with pooled incidence of 45% (95% CI 0.31-0.60, I2=83%, p<0.01, n=348).
- The table captures the key metrics for each type of response, including the pooled response rate, confidence intervals, heterogeneity (I^2), p-value, and number of studies included.

Outcomes	Pooled Incidence	95% Confidence Interval	I^2 (%)	P value	Number of Sudiens (n)
Overall Response	63%	038-0.83	88%	<0.01	350
Partial Response	21%	0.15-0.29	51%	0.06	331
Very Good Partial Response	22%	0.13-0.34	69%	<0.01	331
Complete Response	7%	0.02-0.20	87%	<0.01	350
Stringent Complete Response	7%	0.02-0.20	87%	<0.01	350
Minimal Response Rate	8%	0.05-0.14	22%	0.26	208
Progressive Disease	13%	0.09-0.19	37%	0.17	285
Stable Disease	41%	0.35-0.48	0%	0.79	210

CONCLUSIONS

This study indicates favorable outcomes with CELMoDs in the treatment of MM, however; treatment-related adverse effects remain a major limitation. Further clinical trials are essential to determine the effectiveness and safety of this promising class of drugs more accurately in managing MM.

CONTACT INFORMATION

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