

# Evaluation of Renal Response and Survival in Pre-dialysis Patients with Multiple Myeloma in Two Different Decades: A Single Centre Study

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## Introduction:

20-40% of multiple myeloma patients present with moderate to severe renal impairment. Intense supportive treatment and the rapid initiation of chemotherapy remain the cornerstone of treatment. The introduction of novel drugs has led to significant improvement in the survival of myeloma patients. However, the effect of these novel medications on the survival of pre-dialysis patients with multiple myeloma has not been widely evaluated. The aim of this study is to assess the predictors of survival and improved renal response in this population.

## Methodology:

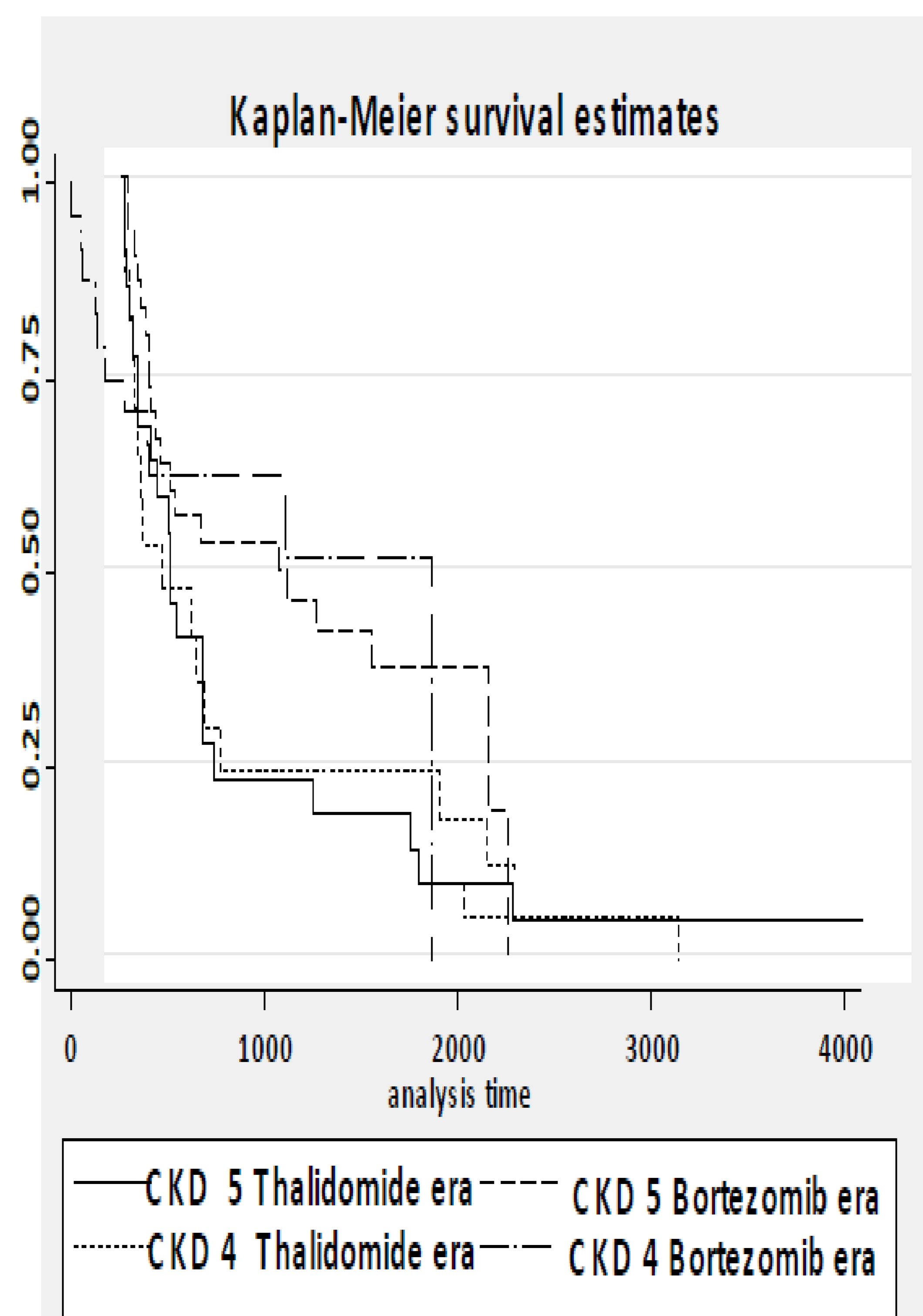
A retrospective study of 97 patients who had bone marrow biopsy proven multiple myeloma with an eGFR of 30ml or less between April 2004 and August 2015 were reviewed. Follow up period was till December 2016. Thalidomide was standard treatment at our centre from April 2004 till December 2009 while Bortezomib became standard treatment from January 2010 onwards. Data including age, sex, EF%, haemoglobin, CRP, renal function, calcium, B2microglobulin, ISS score, total protein, albumin, immunoglobulins, uric acid, LDH and urine PCR was collected.

Renal response was categorised as complete (eGFR improved to >60ml), partial (baseline eGFR <15ml improved to 30-59ml) or minimal (baseline eGFR <15 ml improved to 15 to 29 mL and baseline eGFR 15 to 29 ml improved to 30 to 59 ml).

Endpoints were death or start of dialysis. Kaplan-Meier test and cox hazard regression analysis were used to assess survival. Univariate and multivariate logistic regression analysis was used to assess factors affecting renal response.

## Results:

Patients were divided into 2 treatment cohorts; Thalidomide treated (n=44, m=21, f=23) or Bortezomib treated (n=53, m=25, f=28). Survival was significantly better in Bortezomib group compared to thalidomide group with median overall survival time of 33.6 and 8.3 months respectively (P=0.008).



## Multivariate Cox hazard analysis

_t	Haz. Ratio	Std. Err.	z	P>z	[95% Conf.	Interval]
Tpt-albumin	1.033237	.01385	2.44	0.015	1.006445	1.060742
Treatment						
Thalidomide (base)						
Bortezomib	.7376263	.1737911	-1.29	0.196	.4648213	1.170541
age	1.041898	.0142355	3.00	0.003	1.014368	1.070176
totalprotein	.9809607	.0130608	-1.44	0.149	.9556931	1.006896

Multivariate logistic regression analysis showed that b2microglobulin is a strong predictor of renal response with odds ratio of 0.95. A cut-off point of 30 mg showed 80% specificity of predicting response.

## Factors affecting renal response

Renal response	Odds Ratio	Std. Err.	P>z	[95% Conf.	Interval]
Tpt-albumin	.9979232	.0117074	0.859	.9752389	1.021135
age	.9731645	.0259983	0.309	.9235198	1.025478
calcium	.7443717	.4750019	0.644	.2131166	2.599935
b2microglobulin	.9523972	.0208306	0.026	.9124326	.9941122
Treatment					
Thalidomide (base)					
Bortezomib	.8565027	.4372416	0.762	.314915	2.329507

## Conclusion and Key points

- Survival in pre-dialysis patients with multiple myeloma is better in Bortezomib based era compared to thalidomide based era.
- CKD4 patients in both Bortezomib and Thalidomide treated cohorts have better survival compared to CKD5 patients.
- Age and paraprotein gap are strong predictors of survival
- B2microglobulin may be used as a predictor of renal response in patients who have not reached end stage renal disease.