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Social deprivation affects survival in Waldenström Macroglobulinaemia: experience in the UK

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Introduction:

Waldenström Macroglobulinaemia (WM) is a low-grade B-cell lymphoma characterised by lymphoplasmacytic marrow infiltration, historically described in white cohorts. The IPSSWM is a staging system used to stratify risk of symptomatic patients requiring treatment based on disease and patient related factors. We have previously shown that outcomes in WM may be affected by ethnicity in the UK. It is also known that social and economic factors influence access to healthcare and contribute to health inequality. We examined the role of such factors in presentation and outcomes of WM in a UK cohort.

Methods:

Patients diagnosed with WM from 2012-2023 with complete demographic data were retrospectively reviewed. Ethnicity was categorised according to the UK Office of National Statistics. Socioeconomic deprivation was measured by the Index of Multiple Deprivation (IMD) quintile, the established measure of relative UK deprivation from the Department of Communities and Local Government. It is a composite index derived from household postcodes (1-5: most to least deprived) and based on a weighted average of seven sub-domains (income, employment, education, health, crime, housing and living environment). Follow-up was recorded to June 2024. Overall survival (OS) and treatment-free survival (TFS) were defined from date of diagnosis to death/last follow-up and first-treatment/last follow-up, respectively. Statistical analyses were conducted using STATA v18 (STATAcorp, Texas).

Results:

Three-hundred and five patients (176 male, 129 female) were reviewed. 272 (89%) were White, 18 (6%) Asian, 5 (2%) Black, 10 (3%) were mixed/other. The median age at diagnosis was 64 (range 34-93) years. IMD quintiles were 1in 16 (5%), 2 in 53 (17%), 3 in 71 (23%), 4 in 79 (23%) and 5 in 86 (28%) patients. The median IMD quintile was 4 (range 1-5) and for White, Asian, Black, Other/mixed was 4, 4, 3, 4, respectively. There was no interaction between ethnicity and IMD (p=0.21). At a median follow up of 80 months (95% confidence interval [CI] 74-89), median OS and TFS was not reached and 13 (95% CI 10-22) months respectively. Five-year OS and TFS was 82% (95% CI 77-86) and 29% (95% CI 23-34), respectively. Of 157 evaluable treated patients, IPSSWM was categorised as: low 40% (63/157), intermediate 27% (43/157), high 32% (51/157). One-hundred-and-fifty patients were included in a multivariable model predicting OS including IPSSWM, IMD quintile and ethnicity (Table 1). Significant

predictors of OS were high IPSSWM (vs low, hazard ratio [HR] 6.42 [95% CI 2.28-18.1], p<0.001), Asian ethnicity (v White, HR 6.85 [95% CI 2.03-23.1], p=0.002) and IMD quintile (least v most deprived, HR 0.20 [95% CI 0.06-0.66], p=0.009).

Conclusions:

In our UK cohort, social deprivation as measured by IMD predicts overall survival in WM independently of IPSSWM and ethnicity. Further analysis into subdomains is ongoing.

Table 1. Predictors for OS on multivariable analysis

Variable	Hazard ratio (95% confidence interval)	p value
IPSSWM		
Low	Reference	-
Int	1.29 (0.41-4.02)	0.002
High	6.43 (1.57-6.63)	0.003
Age, per year		
IMD, quintile		
1	Reference	-
2	0.23 (0.05-0.96)	0.05
3	0.12 (0.03-0.45)	0.002
4	0.12 (0.03-0.53)	0.005
5	0.20 (0.06-0.66)	0.009
Ethnicity		
White	Reference	-
Black	NE	NE
Asian	6.85 (2.03-23.1)	0.002
Other	1.04 (0.14-8.42)	0.92

IPSSWM, International Prognostic Scoring System for Waldenstrom Macroglobulinemia; IMD, index of multiple deprivation