Socioeconomic deprivation and visual outcome of wet Age-related Macular Degeneration (wAMD) in Cornwall

N Ali, L Fligelstone, A Patwardhan

Royal Cornwall Hospitals NHS Trust, Truro, Cornwall, UK. Contact: Nadir Ali (nadir.ali@nhs.net)

Royal Cornwall Hospitals NHS Trust

Introduction

In Cornwall, 24% of the population are above the age of 65, making Age-related macular degeneration (AMD) a more significant health problem as compared to most of the other regions in the UK.

Furthermore, 10% of Cornwall's households lie within the 20% most deprived regions of the UK. With this in mind, the Macula services were decentralized to maximize the utilization of the available manpower and resources and provide better service accessibility.

This study was designed to examine the effect of Cornwall's decentralized model of Macula service delivery on the visual outcome of wet AMD in relation to socioeconomic deprivation and distance from nearest available centre.

Methods

All newly diagnosed wet AMD patients who attended one of the 4 Macula clinics within Royal Cornwall Hospitals NHS Trust in the period from 1st January 2016 to 31st December 2017 were identified.

Only the first eye started on anti-VEGF intravitreal injections during the period of the study was included in the study for each of the identified patients.

The variables included in the study were Age; Gender; Ethnic group; Presenting visual acuity; Visual acuity at 3 months; Visual acuity at 12 months; Change in visual acuity at 12 months from the presenting visual acuity; Postcode; Distance to nearest Macula clinic, and Index of Multiple Deprivation (IMD). The distance to the nearest Macula clinic was categorized into 5 groups as follows: < 5 miles, 5 – 10 miles, 10 – 15 miles, 15 – 20 miles and > 20 miles.

Data was collected from hospital Patient Administration System (PAS) and Medisoft Ophthalmology 6.10.0 electronic medical records using Medisoft Audit Suite.

IMD was identified for each patient from the English indices of deprivation report published by the Ministry of Housing in 2019 based on their postcode address.

The data was then transferred into SPSS version 26.0 programme (IBM-SPSS Statistics for Windows, NY, USA) for statistical analysis.

Descriptive and correlational analyses were done to examine demographic and principal characteristic variables for any significant associations. A p value of 0.05 or less was considered significant.

Results

Table 1: Baseline characteristics of patients included in the study

Variable	Mean (SD)
Age (range 56 – 102) in years	80.4 (7.9)
Visual acuity at presentation (letters)	53.2 (14.8)
Visual acuity at 3 months (letters)	58.1 (16.7)
Visual acuity at one year (letters)	57.6 (18.0)
Change of vision at 3 months (letters)	4.7 (11.3)
Change of vision from baseline at one year (letters)	3.5 (14.0)

Table 2: Demographics of patients included in the study

Variable	Number (%)
Gender	
Female	339 (65.3)
Male	180 (34.7)
Ethnic group	
White British	432 (83.2)
Cornish	74 (14.3)
Others	8 (1.5)
Distance to nearest Macula clinic	
< 5 miles	171 (32.9)
5 – 10 miles	181 (34.9)
10 – 15 miles	114 (22.0)
15 – 20 miles	37 (7.1)
> 20 miles	16 (3.1)

Older patients had significantly worse visual acuity at presentation, 3 months and one year (*p<0.001*). The same effect of age was seen with regards to change in vision at 3 months (*p=0.04*), but there was no significant correlation between the presenting age and the change in vision at one year (*p=0.10*). Interestingly, patients between 60 and 80 years of age, not only had both better presenting visual acuity and visual outcome compared to older patients, but also compared to younger patients aged <60 years old (**Figure 1**).

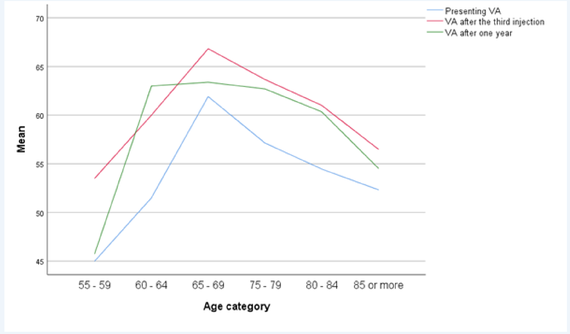


Figure 1: Distribution of presenting visual acuity and visual outcome at 3 months and one year per age group

Females comprised approximately two thirds of the study sample (65.3%) and presented at an older age compared to males (*p<0.001*). However, there was no significant correlation between gender and presenting visual acuity, visual acuity at 3 months and visual acuity at one year (*p=0.43, 0.87 and 0.27* respectively). Likewise, there was no significant difference in these variables based on the ethnicity.

Approximately a fifth (21.8%) of the study population fell within the lowest three groups of IMD. Kruskal-Wallis test showed no statistically significant difference in presenting visual acuity, visual acuity at 3 months and visual acuity at one year among the 9 groups of IMD (*p = 0.96, 0.27 and 0.06* respectively, **Figure 2**), with no significant difference in the change in vision at one year among these groups (*p = 0.17*).

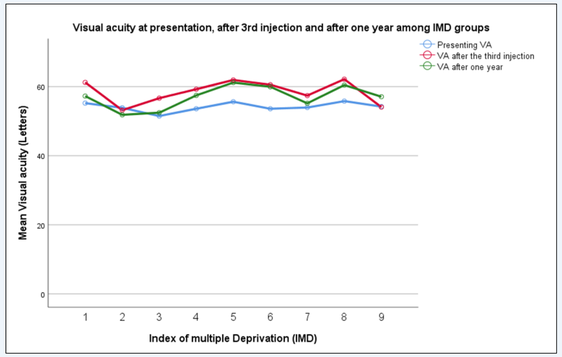


Figure 2: Line graph showing the distribution of the mean visual acuity at presentation, at 3 months and at one year among the 9 IMD groups.

There was no statistically significant difference in visual acuity at presentation and at one year based on the distance to the nearest Macula clinic (p = 0.205 and 0.367 respectively). However, there was statistically significant difference in visual acuity at 3 months based on the distance to the nearest Macula clinic, with better resulting visual acuity in those who lived further to a Macula clinic than those who lived nearby (*p=0.038*).

Conclusion

For the management of neovascular AMD in Cornwall, IMD and distance to nearest Macula clinic did not have significant effect on the presenting visual acuity and the visual outcome of patients with wet AMD.

The authors suggest a community reach-out model, based upon a decentralized service, may be more effective in delivering accessible and affordable macular care among rural communities with significant socioeconomic deprivation compared with a centralized tertiary care centre.