

Evaluation of Vaccination Status of Patients Diagnosis of Multiple Myeloma or Monoclonal Gammopathy of Uncertain Significance: Analysis of Coverage in the Province of Catania

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INTRODUCTION

The patient diagnosed with multiple myeloma or monoclonal gammopathy of undetermined significance (MGUS) is considered a fragile patient, at risk of severe post-infectious outcomes [1] for which adequate vaccination prevention against pneumococcus and meningococcus, Herpes Zoster virus, influenza virus, SARS-CoV2 is recommended [2].

Despite existing recommendations, there is limited evidence regarding actual vaccination coverage of these patients [3].

OBJECTIVES

This study aims to evaluate the vaccination status in a cohort of haemato-oncology patients and to propose strategies to improve their vaccination coverage.

METHODS

We conducted a retrospective cohort study on 737 patients with multiple myeloma or MGUS diagnosed in the province of Catania in the period 2000-2023, coded by the Integrated Cancer Registry. Vaccination status was retrieved by cross-referencing cases with data in the Provincial Vaccination Registry. Medical records and vaccination data collected during outpatient visits, hospital admissions for possible hospitalization for infectious disease were examined and the

presence of infectious disease diagnoses among the causes of death was verified. The data will be presented in aggregate form. The variables considered were: tumor diagnosis, last follow-up date, date of death, date and components of vaccinations performed.

Relative risk with 95% confidence intervals on deaths with respect to the vaccination stratum analyzed by type of disease was calculated. Analyses were performed with Stata 17. For all statistical tests, the significance level was set at a p value <0.05.

RESULTS

Preliminary results indicate poor adherence to recommended vaccinations. Frequency distribution of variables of vaccination status, post-diagnosis vaccination, cycle completeness and timing of vaccinations were calculated.

The observed coverage is 30.9% for influenza, 6% for Varicella Zoster, 39% for SARS-CoV2, 1.5% for meningococcus and 10% for pneumococcus of vaccinable subjects.

The observed all-cause mortality rate among never-vaccinated subjects is 45.4%; among subjects with at least one dose of vaccine, it is 18.4%. Delays in meeting recommended intervals and incomplete cycles have been observed.

Relative risk (RR) analysis shows that vaccination is significantly associated with a reduction in mortality in the overall cohort (including patients with MGUS and multiple myeloma). In particular, subjects who have received at least one of the recommended vaccinations have a reduction in the risk

of death of approximately 60% compared to unvaccinated subjects.

In detail:

- In patients with MGUS, vaccination is associated with an approximately 74% reduction in the risk of death.
- In patients with multiple myeloma, the risk reduction is around 42.7%.

Focusing the analysis on individual vaccines:

- Vaccination against COVID-19 is associated with an approximately 63% reduction in the risk of death.
- The one against the flu shows a reduction of 59.2%.

For pneumococcal, meningococcal, and Herpes Zoster vaccines, no statistically significant association with mortality was observed, either in the overall cohort or in subgroups. However, potentially relevant trends emerge:

- In patients with MGUS, meningococcal vaccine showed a RR of 1.65 (95% CI: 0.91–3.02; $p = 0.10$), while herpes zoster vaccine showed a RR of 0.65 (95% CI: 0.35–1.21; $p = 0.18$). The wide confidence intervals suggest a possible lack of statistical power to detect significant effects.

CONCLUSIONS

Protection provided by vaccination is present in both subgroups, but is more marked in MGUS patients ($RR \approx 0.26$) than in those with myeloma ($RR \approx 0.57$). The study provides an overview of the vaccination status in haemato-oncology patients, highlighting the need for personalized strategies: vaccination recommendations in the discharge letter, promotion of training of hospital staff and the attending physician. The organization of vaccination sessions in the hospital outpatient setting has been activated in conjunction with periodic or follow-up checks.

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