

Cardiovascular Disease and Marrow Vascular Markers in Patients with Myeloid Malignancies

Gabriela Sanchez-Petit^{1, 2*}, Michael Kallen³, Madhurima Koka³, Olga Goloubeva⁴, Jack Masur², Max An², James Childress², Tahreem Iqbal², Muhammad Safwan², Justin Lawson¹, Brian Barr⁵, Vu H. Duong^{1, 2}, Jennie Y. Law^{1, 2}, Ashkan Emadi^{1, 2}, Maria R. Baer^{1, 2}, Sandrine Niyongere^{1, 2}

¹ Division of Hematology, University of Maryland School of Medicine and Marlene and Stewart Greenebaum Comprehensive Cancer Center, Baltimore, ² Division of Internal Medicine, University of Maryland School of Medicine, Baltimore, ³ Department of Pathology, University of Maryland School of Medicine, Baltimore, ⁴ Department of Epidemiology & Public Health, University of Maryland School of Medicine, Baltimore, ⁵ Division of Cardiology, University of Maryland School of Medicine, Baltimore



Abstract

- The incidence of both myeloid malignancies and cardiovascular disease (CVD) increases with age.
- We aimed to study whether the presence of CVD is associated with worse outcomes in patients with myeloid malignancies and to delineate a possible mechanism.

Background

- Cardiac disease is the most frequent cause of non-hematologic morbidity in patients with myelodysplastic syndrome (MDS).
- Diabetes mellitus and atherosclerosis are associated with bone marrow hypoperfusion, reduction of stem cells, and decreased vascular markers.
- We aimed to compare overall survival (OS) and marrow microvascular density (MVD) among patients with and without CVD.

Definitions

- CVD: Congestive heart failure (CHF), coronary artery disease (CAD), arrhythmia, peripheral vascular disease, congenital heart disease and/or cerebrovascular accident.

Materials & Methods

Clinical outcomes:

- We retrospectively reviewed 295 patients diagnosed with AML (228), MDS or MDS/MPN (77)
- Objectives: Overall response rate (ORR), OS, cardiac events and death.
- Patient characteristics were compared between those with CVD vs. no-CVD using the Fisher's exact and t-tests.

MVD:

- Evaluating MVD using CD34-stained bone marrow sections of 20 MDS patients (11 with CVD and 9 without CVD).
- The mean number of blood vessels was calculated for each sample and compared using the t-test.

Results

Clinical outcomes:

Fig 1. ORR in AML and MDS pts with and without CVD

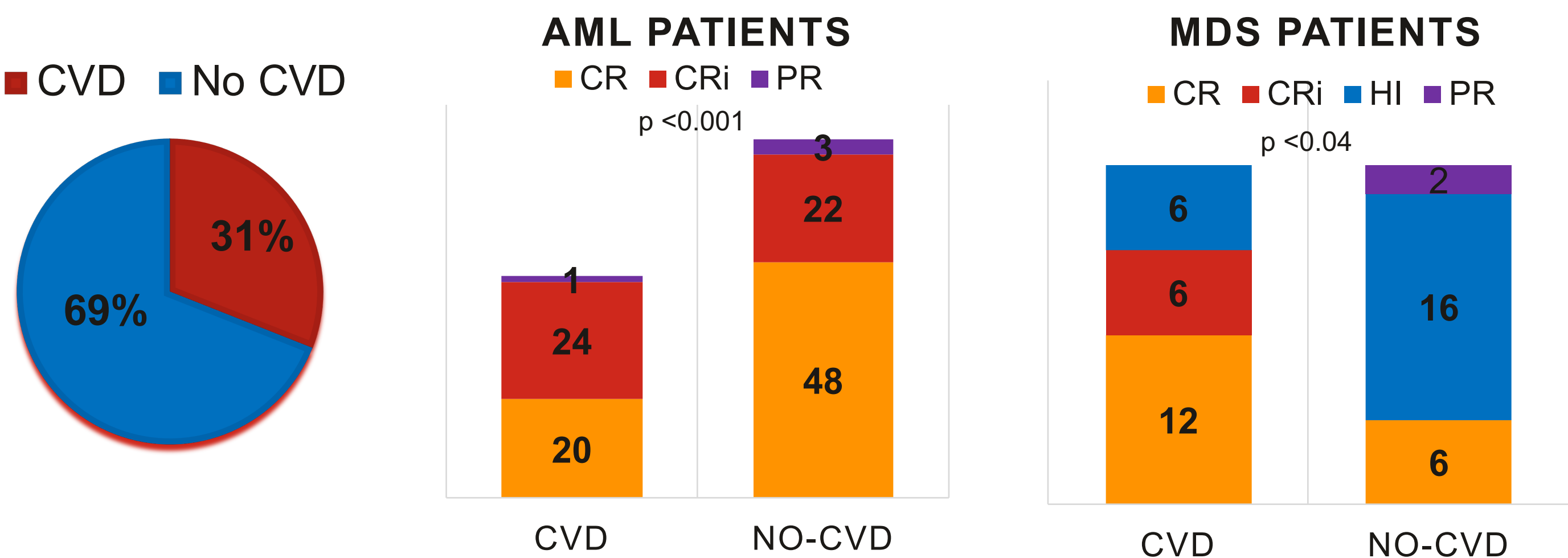
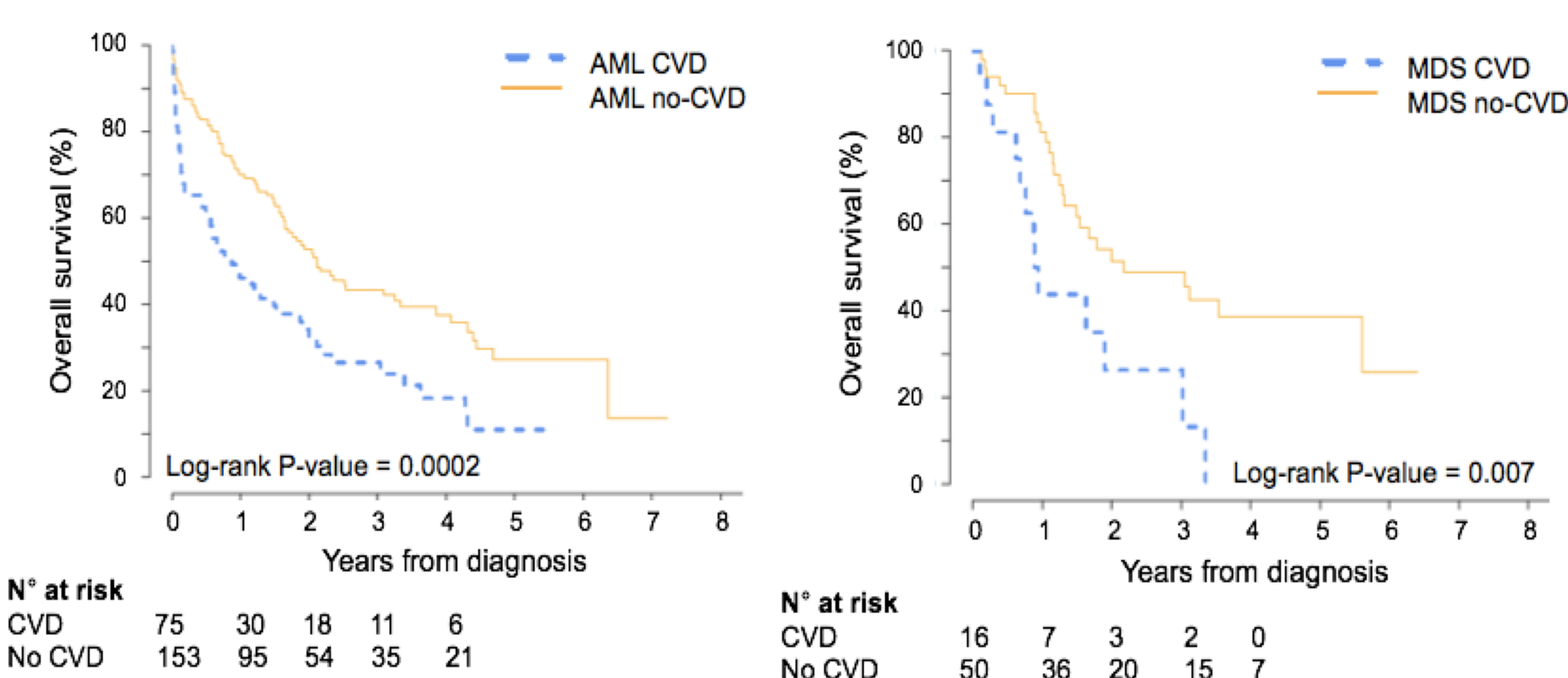


Fig 2. OS in AML and MDS pts with and without CVD

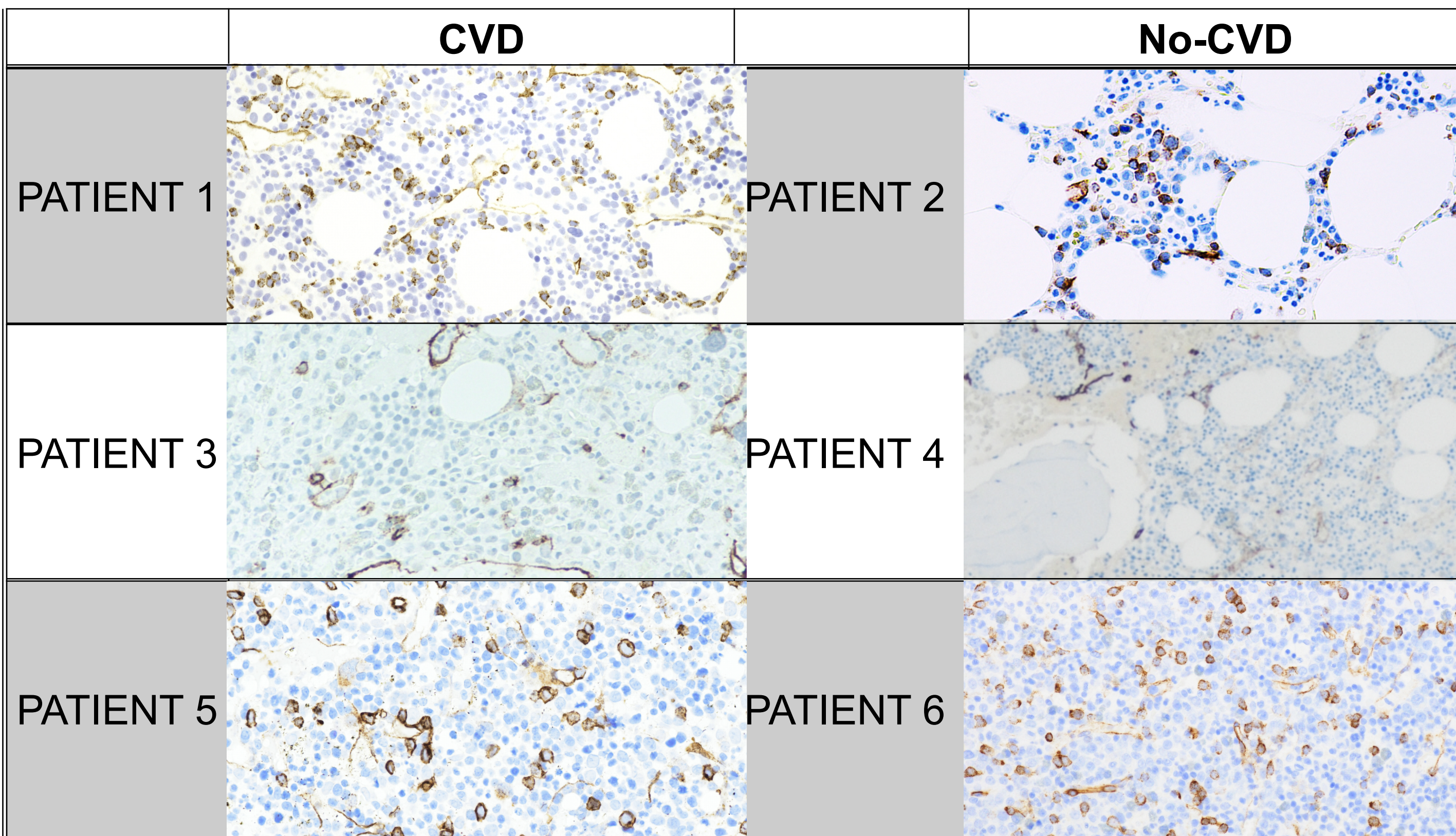


- Early deaths (CVD vs no-CVD): AML: 33% vs. 11%; MDS: 12% vs. 4%
- Cardiac events (CVD vs no-CVD): CHF exacerbation (27 vs 10%), arrhythmia (20 vs 10%), myocardial infarction (13 vs 2%).

MVD:

- MVD in patients with CVD vs. no-CVD (mean score 17 vs. 22, p=0.4), smoker vs. never smoker (mean score 19 vs. 20, p=0.9), with vs. without diabetes mellitus (mean score 23 vs. 13, p=0.1)

Table 1. CD34-stained bone marrow sections of 6 patients with MDS



- The lack of significant difference may be attributed to the small sample size.

Conclusions

- About one third of patients with a myeloid malignancy have a preexisting CV condition
- The presence of CVD is a very important predictor of survival outcomes in patients with AML and MDS
- Variability in MVD is a possible mechanism of impaired treatment response in CVD patients, which warrants further evaluation.
- A better understanding of the association between myeloid malignancies and CVD can translate into better therapeutic options for these patients

References

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