Abstract: P1049

Title: CHARACTERISTICS AND OUTCOMES OF CARDIOVASCULAR INVOLVEMENT IN ERDHEIM-CHESTER DISEASE

Abstract Type: Poster Presentation

Session Title: Myeloproliferative neoplasms - Clinical

Background:

Erdheim-Chester disease (ECD) is a rare non-Langerhans cell histiocytosis. Relatively little is known about cardiac involvement in ECD, which occurs in about 40% of cases and has been associated with a worse prognosis (Gianfreda et al. 2016).

Aims:

To characterize ECD-related cardiac lesions and associated outcomes with respect to anatomic locations, associated cardiovascular comorbidities and prognosis.

Methods:

Records of patients (pts) with biopsy-proven ECD diagnosed from Jan. 1990 to Dec. 2021, seen at Mayo Clinic in MN, FL, and AZ, were reviewed. The *BRAF* mutation status, site and type of cardiac involvement, arrhythmias or conduction abnormalities, cardiovascular comorbidities, and first-line therapy received were captured. Cardiac involvement was diagnosed with cardiac imaging (PET-CT, cardiac CT, or cardiac MRI). All time-to-event analyses were performed using the Kaplan-Meier method. Progression-free survival (PFS) is defined from first-line therapy to first progression, not specific to ECD cardiac progression, or death.

Results:

Among 106 pts with ECD, 38% (n=40) had cardiac involvement. The mean age at diagnosis for the cohort was 57 years (range: 49-67); 61% were males. The median follow-up was 4.2 years (95% CI: 3.5-5.8); pts with cardiac involvement, 5 years (95% CI: 3.5-6.1), and without, 4.1 years (95% CI: 3.2-6.5), p=0.92. Sixty-five percent of ECD cardiac-involved pts (n=26) had $BRAF^{V600E}$ mutation compared to 42% of pts without (n=28), p=0.024.

Cardiac imaging showed localization to the pericardium (n=17; 43%), myocardium (n=30; 75%), or coronary arteries (n=21; 53%). The right atrium was the most frequently affected myocardial location [RA n=29 (97%), LA n= 3 (10%), RV n=2 (6%), LV n=1 (3%)]. Infiltration around the coronary arteries was greatest around the RCA (53%) (right n=21, left n=6).

Eleven (28%) of cardiac-involved pts had pericardial effusion, and 3 (8%) had cardiac tamponade. Eighteen (45%) of cardiac-involved pts had cardiac arrhythmias or conduction abnormalities, with higher rates in patients with myocardial involvement than patients without myocardial involvement (67% vs. 33%, p=0.271). Of those 12 pts, 11 had RA involvement and one had biatrial involvement. Six (33%) of those 18-pts had pericardial involvement and 8 (44%) had Infiltration around the CA.

Eight pts with ECD and cardiac involvement died; one died from sudden cardiac death. Hypertension was present in 68% of pts (n=27) with cardiac involvement compared to 36% in those without (n=32), p=0.05. Current or prior smoking was present in 43% of pts (n=18) with cardiac involvement compared to 24% in those without (n=16), p=0.05.

The estimated 5-year OS rate was 80% in ECD pts with cardiac involvement and 90% in ECD pts without cardiac involvement (p=0.44) (Figure 1A). The time from diagnosis to initial treatment (p=0.63) as well as the time to subsequent treatment after first-line therapy did not differ significantly (p=0.25) between ECD pts with vs without cardiac involvement. The median PFS was 2.7 years (95% CI: 2.0-8.8) in pts with, compared to 6.9 years (95% CI:

5.6-NA) in those without cardiac involvement (p=0.03) (Figure 1B).

Summary/Conclusion:

Our data showed that the myocardium is the most commonly affected structure in ECD with cardiac disease, and the RA is the most affected chamber. Smoking, hypertension, and *BRAF*^{V600E} mutation were more common in pts with cardiac-involved ECD as compared to pts without. Although the OS in pts with cardiac-involved ECD was not different compared to those without, pts with cardiac involvement had a significantly shorter PFS compared to those without.

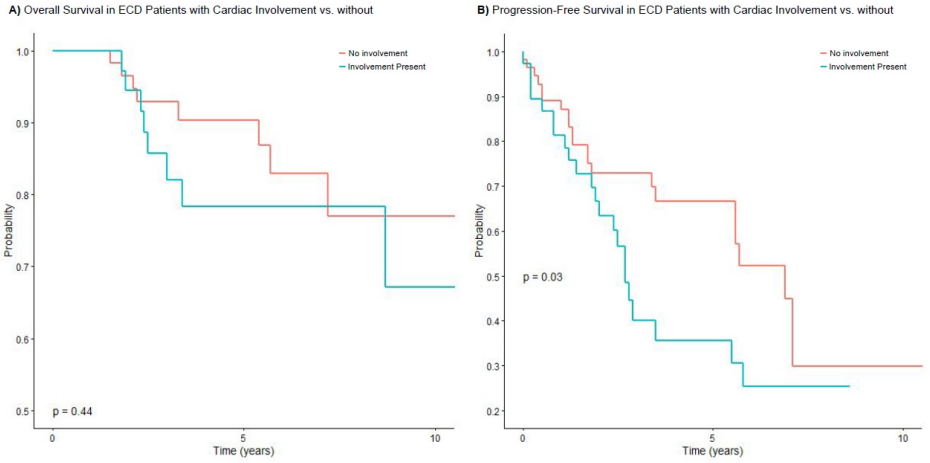

Figure 1A and B. Kaplan Meier Survival Plots: (A) Overall survival and (B) progression free survival in patients with ECD who had cardiac involvement compared to those without cardiac involvement.

Keywords: Histiocytosis, Hematological malignancy