Control Number: 75

Abstract Category: Clinical Science in Cardio-Oncology

Title: Incidence of Cardiotoxicity in Patient with Leukemia Being Treated with Tyrosine Kinase Inhibitors

ABSTRACT BODY

Background

Tyrosine kinase inhibitors (TKIs) are associated with vascular toxicity and heart failure.

Methods

We examined the incidence of cardiac toxicity in a large cohort of cancer patients who received TKIs by conducting a retrospective review of 89 patients who received TKIs (Imatinib, Nilotinib, Dasatinib, Bosutinib, Ponatinib and Ibrutinib) for leukemia (2012-2019). We evaluated the rates of heart failure (HF) hospitalizations, atrial fibrillation and abnormalities of systolic or diastolic function determined by echocardiography.

Results

At long term follow up (4-7 years), the incidence of HF hospitalization was 2/89 (2%) and atrial fibrillation was 2/89 (2%). Pleural effusion was seen in 2/89 (2%) with Dasatinib. Cardiac mortality was 1/89 (1%) due to right HF from pulmonary hypertension and occurred after taking Nilotinib for 6 years. Demographics of patients with and without cardiac events are in Table 1. Ejection fraction (EF) assessments were available at baseline and during therapy in 27/89 (30%) patients. No patient had HF with reduced EF defined as EF < 50% at baseline. During treatment 4/27 (15%) had EF < 50%, mean EF 36% (range 15-45%). All patients' EF recovered to normal within 1 year. 11% had left atrial enlargement defined as either left atrial dimension > 4cm or volume index > 34 ml/m2.

Conclusion

At long term follow up, TKIs are rarely associated with clinically significant HF but the incidence of subclinical HF was much higher.

Clinical Implications

Routine echocardiographic monitoring could help in earlier detection and management of HF.

Table

Table 1. Demographics of patients with and without clinical cardiotoxicity.		
	Without clinical cardiotoxicity	**With Hospitalization for HF/AF/Pulmonary HTN**
Number of Patients	85	4
Average Age	58	78
Gender		
Male	45 (53%)	2 (50%)
White	65 (76%)	3 (75%)
Black	13(15%)	1 (25%)
Hispanic	4 (5%)	0
Smoker	0	0
Obesity, BMI > 30	28%	1 (25%)
Cancer type		
B cell ALL	8 (9%)	1 (25%)
CML	44 (52%)	2 (50%)
CLL	2 (2%)	1 (25%)
AML	8 (9%)	0
GIST	16 (19%)	0
Other	8	0
Status		
Alive	68 (85%)	2 (50%)
Deceased	18 (15%)	2 (50%)
Medications		
ACEi	28 (33%)	2 (50%)
Beta Blocker	31 (36%)	2 (50%)
Diuretic	44 (52%)	3 (75%)
Statin	22 (26%)	2 (50%)
TKI		
Nilotinib	7 (8%)	3 (75%)
Dasatinib	32 (37%)	1 (25%)
Imatinib	23 (27%)	0
Bosutinib	1 (1%)	0
Ibrutinib	2 (2%)	1 (25%)
Sunitinib	1 (1%)	0
Multiple TKIs	20 (24%)	0