

Relative Clinical Benefit of Biventricular Pacing in Cardiac Amyloidosis

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Background

- Cardiac amyloidosis (CA) is associated with high rates of intrinsic conduction disease
- Patients with CA and cardiac implantable electronic devices (CIED) have demonstrated an eventual reliance on ventricular pacing, regardless of initial CIED indication
- A prior single center study showed an association between biventricular (BiV) pacing in CA patients and mortality reduction
- We sought to validate effects of BiV pacing on survival, and evaluate effects on hospitalizations and ECHO parameters of LV performance.

Hypothesis

As compared to univentricular (UV) pacing, BiV pacing in patients with CA reduces mortality and hospitalizations, and improves LVEF.

Methods

- Retrospective, observational cohort study
- Patients with CA and CIED implantation using the Duke Cardiac Amyloidosis Database
- Kaplan Meier and cumulative incidence plots to describe cumulative incidence of clinical events
- Cox proportional hazard models to test association between composite endpoint and baseline characteristics including device type
- 3.8 years mean length of follow-up

Results

Table 1. Demographics and baseline characteristics

	UV (N=37)	BiV (N=13)	P-value
Median Age (yrs)	74	75	NS
Male Sex	30	12	NS
CA Type			NS
ATTR	28	12	
AL	9	1	
Device Indication			NS
Sick Sinus Syndrome	11	1	
AV Block	13	6	
Tachy-Brady (AF)	1	2	
Primary Prevention	8	3	
Secondary prevention	4	1	

Figure 1. First hospitalizations for heart failure (HF) were the most common clinical event to occur over follow-up.

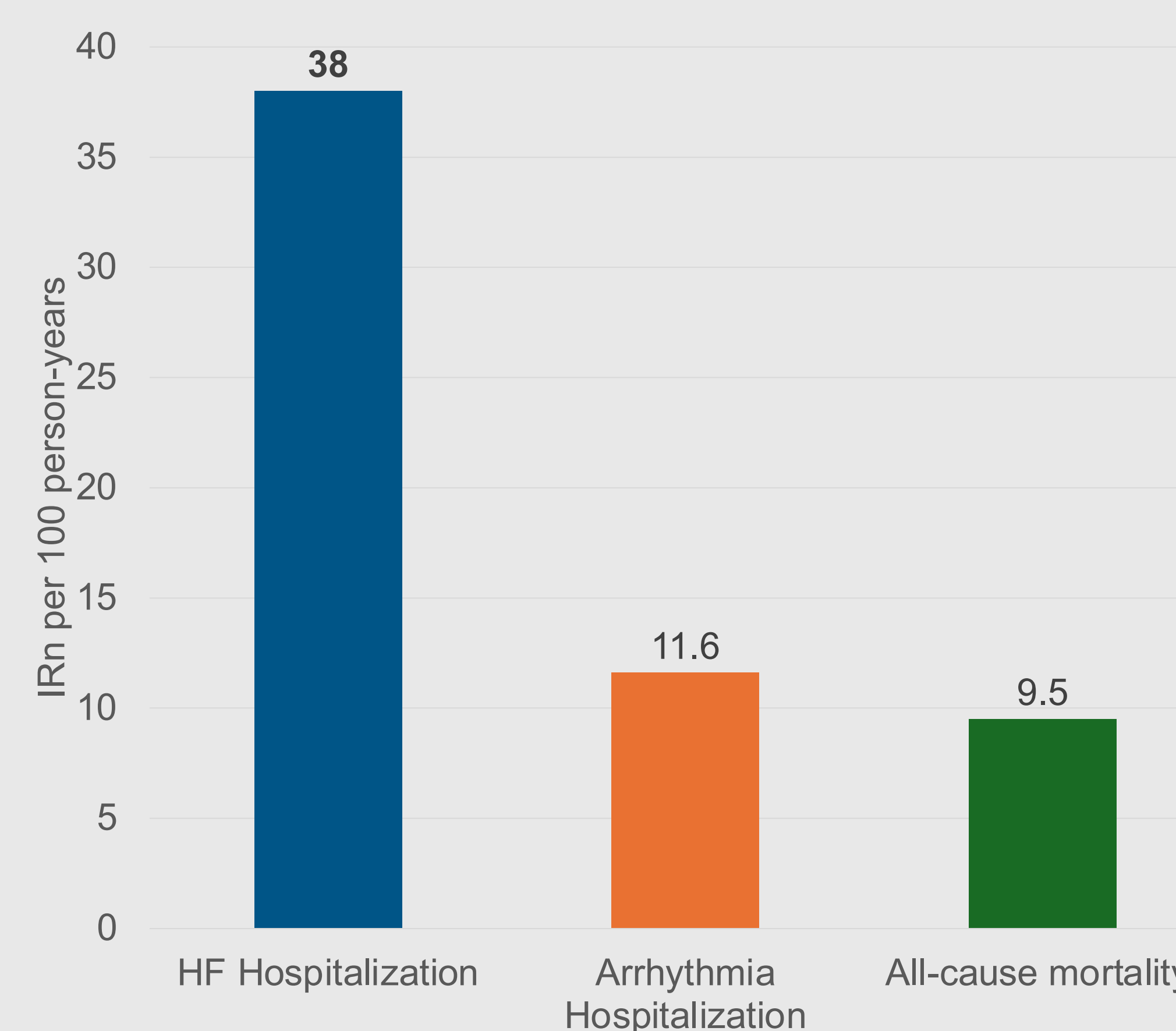


Figure 1: There was a trend towards lower all-cause mortality in BiV group after 1 year.

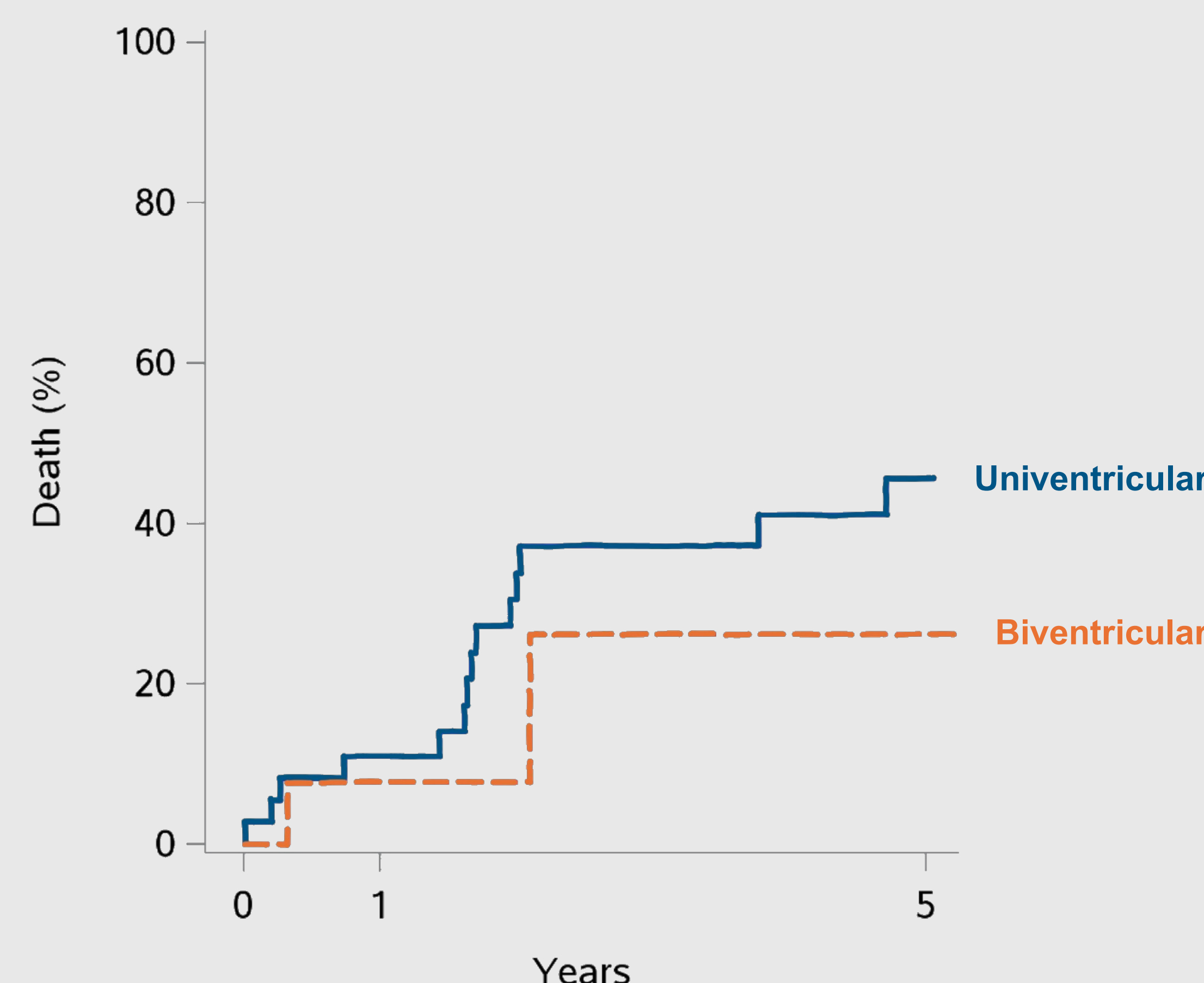
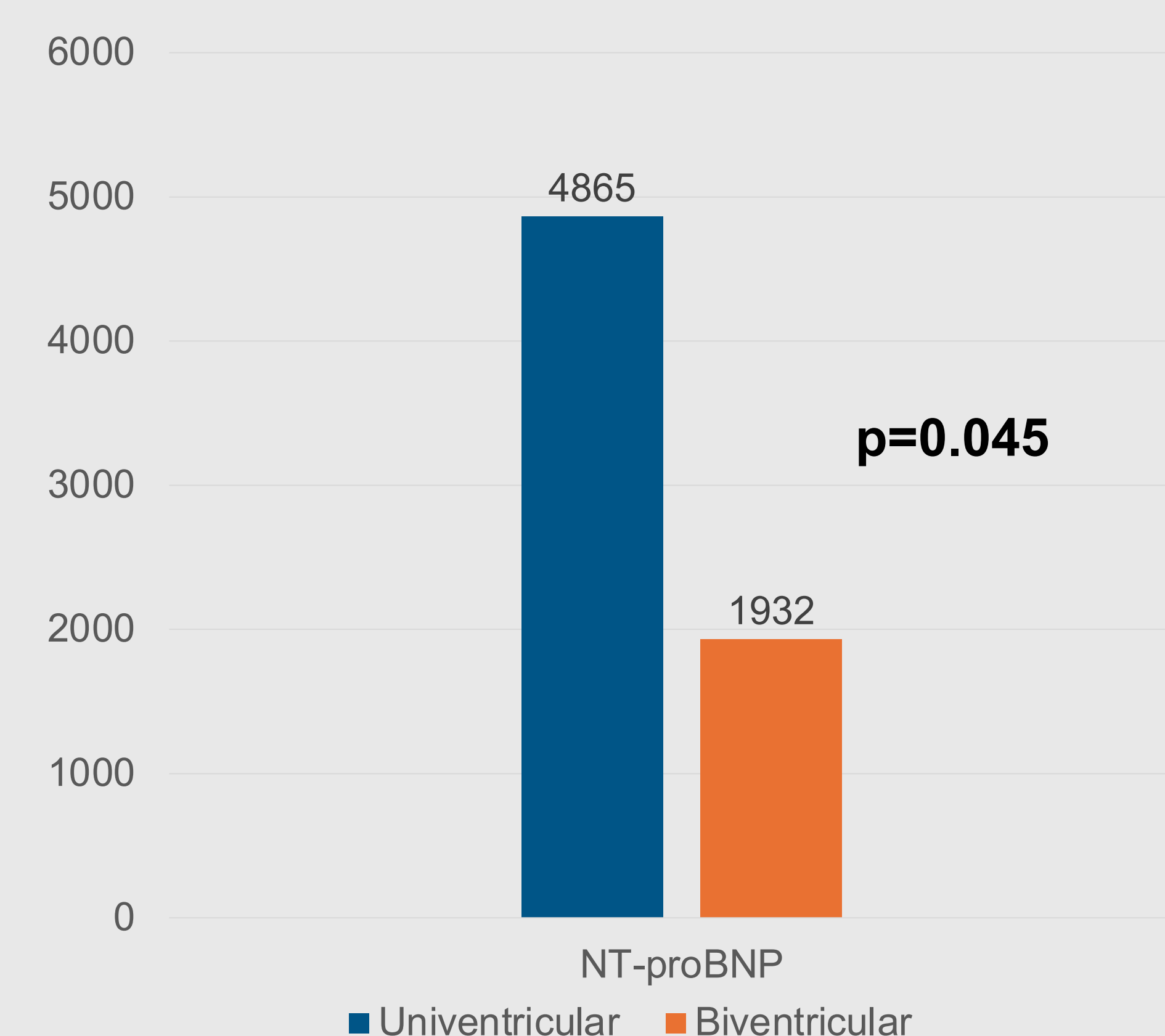


Figure 2: NT-proBNP levels were significantly lower in BiV-paced patients within 1 year of follow-up



Conclusions

- BiV pacing may reduce all-cause mortality compared to UV pacing in CA patients
- NT-proBNP levels, which are known to be prognostic in patients with CA, were significantly lower in BiV-paced patients compared to UV-paced patients within one year of follow-up

Discussion

- In most CA patients, death is secondary to cardiovascular causes, including HF and sudden cardiac death
- In HF unrelated to CA, the BLOCK-HF and MADIT-CRT trials found BiV pacing to be associated with mortality reduction, primarily driven by a decrease in HF hospitalizations and HF events respectively, in patients with CIED indications

Future Directions

Given evidence demonstrating an eventual reliance on ventricular pacing in CA patients who have a CIED indication, the potential relative benefits of BiV pacing in the CA population merit further investigation in larger, prospective multi-center studies

References

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