

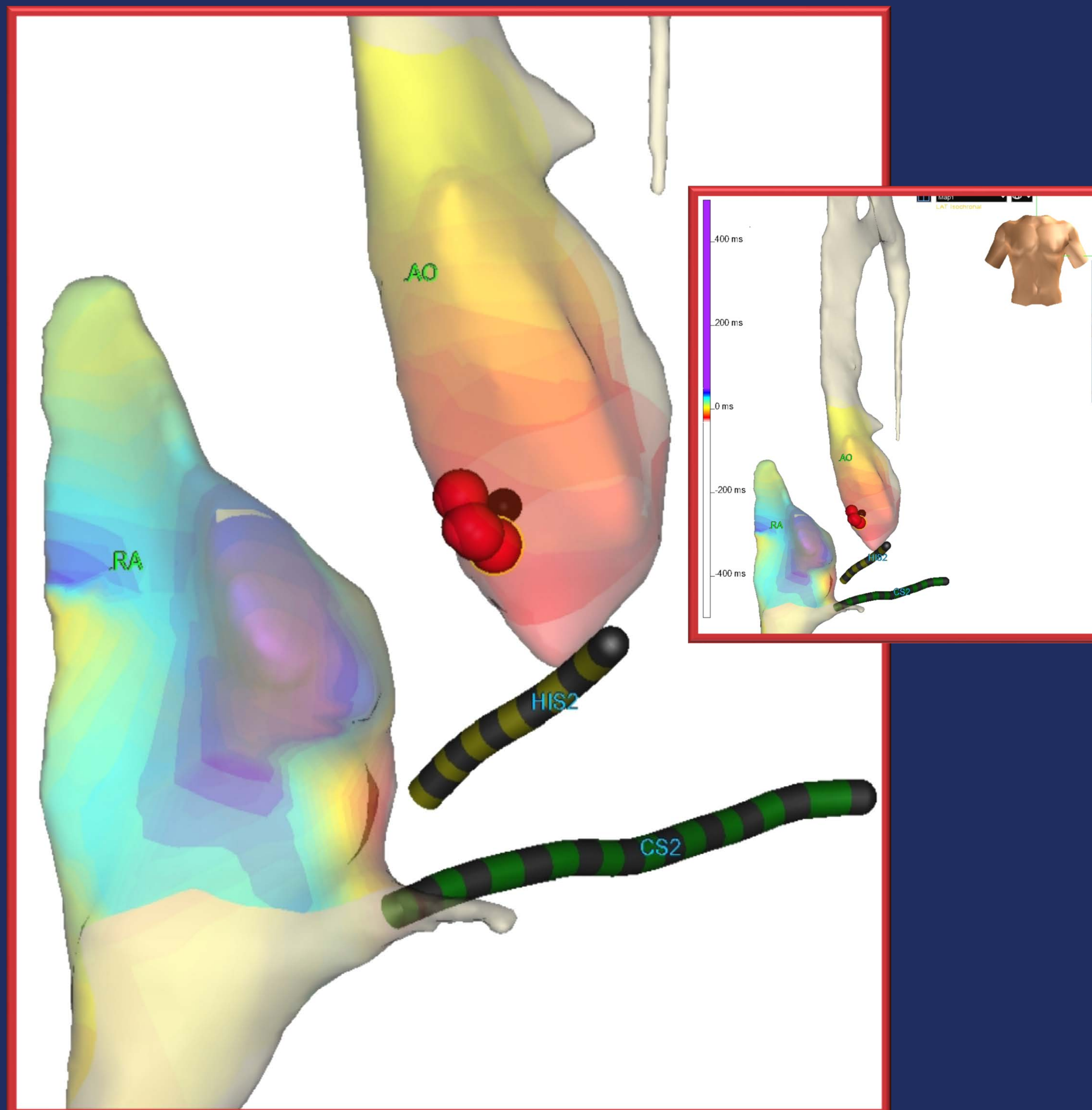
## Background

- Nonautomatic focal atrial tachycardia (NFAT) is rare, arising from a focal source, not due to enhanced automaticity and both inducible and terminable by pacing maneuvers.
- It is theorized that this represents a microreentrant circuit, and there are only a few reports in the literature.
- NFAT has been described predominately in adults, with foci in the right atrium.
- We describe a case of NFAT with earliest activation during electrophysiology (EP) study mapped to the right aortic cusp. To our knowledge this foci has not previously been described in the pediatric population.

## Case Presentation

A 15 year-old female was referred for evaluation of supraventricular tachycardia (SVT). Her palpitations were not associated with activity and lasted from two minutes to an hour and a half. Evaluation at an emergency department demonstrated SVT (210 bpm), which terminated spontaneously with no visible P waves. She could terminate these episodes with Vagal maneuvers, suggesting a reentrant mechanism. She was otherwise asymptomatic with no history of syncope. Physical examination and ECG were normal.

## Electrophysiology Study



- An invasive electrophysiology (EP) study was performed using standard techniques.
- Atrial and ventricular incremental pacing and double atrial stimulus protocol were used.
- Tachycardia was inducible with rapid atrial pacing and terminated with atrial burst pacing, PACs, or adenosine.
- There was no evidence of AV node reentry tachycardia or accessory pathway connection.
- Infusion of isoproterenol, 2-4 mcg/min, was required to induce sustained tachycardia.
- Right posterior septal mapping showed multiple early areas.
- Retrograde mapping through the aorta showed the earliest activation in the right coronary cusp.
- A radiofrequency ablation catheter was used to place four 60-second lesions at the base of the cusp.
- Tachycardia was then inducible only for 3-4 beats with atrial burst pacing on isoproterenol.
- Echocardiogram demonstrated normal aortic valve without regurgitation or thrombus, and normal ventricular function.

## Conclusions

- NFAT is a rare tachycardia which should be considered in the differential diagnosis of pediatric patients presenting with reentrant SVT.
- Formal EP study is needed to distinguish NFAT from other atrial tachycardias, and 3-D mapping technology is useful.
- Ablation of NFAT arising from the right aortic cusp is technically challenging, but can potentially be done safely in the pediatric population.

## References

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