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COMPARATIVE ACCURACY OF STANDARD ECG ALGORITHMS FOR THE DIAGNOSIS OF BROAD COMPLEX TACHYCARDIA IN CASES OF ATRIAL FLUTTER WITH 1:1 CONDUCTION

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Background Atrial flutter with 1:1 conduction often presents with broad complex tachycardia (BCT), commonly misdiagnosed as ventricular tachycardia (VT). The utility of standard ECG algorithms for classification of BCT has not been evaluated in this subgroup.

Methods 25 patients had confirmed atrial flutter with 1:1 conduction presenting as BCT. 12/25 (48%) were taking class I agents. The 12-lead ECGs were independently classified as 'SVT' or 'VT' by two blinded electrophysiologists, using five established BCT algorithms: Wellens *et al* 1978; Brugada *et al* 1991; Griffith *et al* 1994; Vereckei *et al* 2008; Pava *et al* 2010.

Results Mean ventricular rate 219±34 bpm, LBBB pattern in 19/25 (76%), QRS duration >140 ms in 20/25 (80%) and left axis deviation in 14/25 (56%) patients. Possible (but not definite) VA-dissociation was noted in 10 cases (40%).There was close inter-observer agreement. The results of the ECG analysis were:

There was a high rate of mis-classification as VT by all algorithms except Pava (R wave peak time at DII or RWPT) which correctly identified the origin in 76% of cases.

Conclusions Atrial flutter presenting with 1:1 conduction and BCT is often mistaken for VT and 'pseudo-VA dissociation' is relatively common. Standard ECG algorithms are relatively inaccurate in this subgroup, except for RWPT which identified the supraventricular origin in 76% of cases. A high level of vigilance is necessary to make the correct diagnosis

Table 1

	SVT	VT	Accuracy
Wellens 1978	4	21	16%
Brugada 1991	5	20	25%
Griffith 1994	14	11	56%
Vereckei 2008	7	18	28%
Pava 2010	19	6	76%