Safety of use of beta blockers in patients with Transposition of the Great Arteries

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Background:

Patients born with transposition of the great arteries (TGA) have a higher incidence of bradyarrhythmias, tachyarrhythmias and complete heart block.[1,2] Despite this awareness, beta blockers are still commonly used in the management of tachyarrhythmias in this patient group, leading to concerns about increased morbidity and pacing requirement. More recently, beta blocker usage post atrial switch has been shown to improve right ventricular ejection fraction (assessed by radionuclide ventriculography), New York Heart Association (NYHA) functional status and quality of life indicators.[3] However, the safety of Beta blocker usage in TGA patients has not been fully assessed from an arrhythmia point of view and many clinicians remain uncertain.

Aim:

To assess the safety of beta blocker usage in adult patients with surgically treated transposition of the great arteries.

Method:

Medical case records of 21 TGA patients were reviewed. Eight patients were excluded as they had previously received pacemaker implantations without access to medical records. Therefore, 13 patients were included in the analysis cohort. Information regarding previous interventional history, indications for use, dosages used and development of symptoms was collected. Symptoms were categorised into heart block (all variations), sinus bradycardia and syncope. A further 3 patients were excluded due to inadequate medical records, leaving the final cohort of 10 patients.

Results:

There were 5 females and 5 males with median age of 31 years (range 22- 44 years). Four patients had received arterial switch procedure previously and 4 had undergone atrial switch (Mustard or Senning) procedures. Mean duration of beta blocker usage was 34 $\pm$ 23 months. Of the four patients post atrial switch, 3 were on Bisoprolol. Of these, 1 had an episode of bradycardia that was not attributed to beta blocker usage (dose 2.5mg) and 1had pre-syncopal symptoms (dose 1.25mg). From the 4 patients post arterial switch, 2 were taking beta blockers of which none experienced any complications. One patient that had undergone a Réparation à l'Etage Ventriculaire procedure was on beta blockers and had remained complication free.

Conclusion:

We have shown that patients with previous surgically repaired TGA tolerated beta blockers well. Thus, up titration of beta blockers should be considered in clinical practice to provide these patients with further benefit for the control of tachyarrhythmias, heart failure and quality of life.

References:

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				beta blocker			
Gender	**Age**	**Diagnosis**	**surgical intervention**	**drug**	**final dose**	**months**	**complications**
M	42	l-TGA	Total mirror imagery (atrial situs inversus) LV to pulmunary artery conduit construction, VSD closure	bisoprolol	2.5mg	50	none
M	34	d-TGA	Mustard procedure	bisoprolol	2.5mg	41	bradycardia
F	44	d-TGA	Senning procedure	bisoprolol	1.25mg	18	bradycardia presyncopal symptoms
F	35	d-TGA	Mustard procedure	bisoprolol	2.5mg	76	none
F	28	d-TGA	Senning procedure	_	_	_	_
M	22	d-TGA VSD	Blalock-Taussig shunt→ REV procedure	bisoprolol	1.25mg	7	none
F	37	l-TGA	Arterial switch procedure	bisoprolol	2.5mg	27	none
F	22	d-TGA	Arterial switch procedure	_	_	_	_
M	22	d-TGA	Arterial switch procedure	_	_	_	_
M	24	d-TGA	Arterial switch procedure	bisoprolol	2.5mg	20	none