

# Maternal antenatal beta-blockade: an independent risk factor for fetal growth restriction

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# To investigate whether ...

beta-blockade  
is an  
independent risk factor  
for  
fetal growth restriction  
in  
non-hypertensive women



Retrospective cohort study, 2002 - 2016

St Michael's Hospital, Bristol

100 deliveries

43 exposed to beta-blockers v

57 matched non-exposed controls

records and maternity/neonatal databases

**Exclusions:** HT, smoking, DM, extremes of BMI, left sided obstructive heart disease, impaired systemic ventricular function, fetal abnormalities and pregnancy specific conditions affecting fetal growth



maternal age

ethnicity

parity

BMI

mode of delivery

birth weight

gestation at delivery

fetal gender

admission to NICU

neonatal hypoglycaemia

Gestation-specific birth weight centiles using (WHO) calculator

Linear regression modelling with confounders

Chi-squared test for likelihood of small for gestational age (SGA) infant

SGA: an infant with birth weight <10<sup>th</sup> gestation specific centile

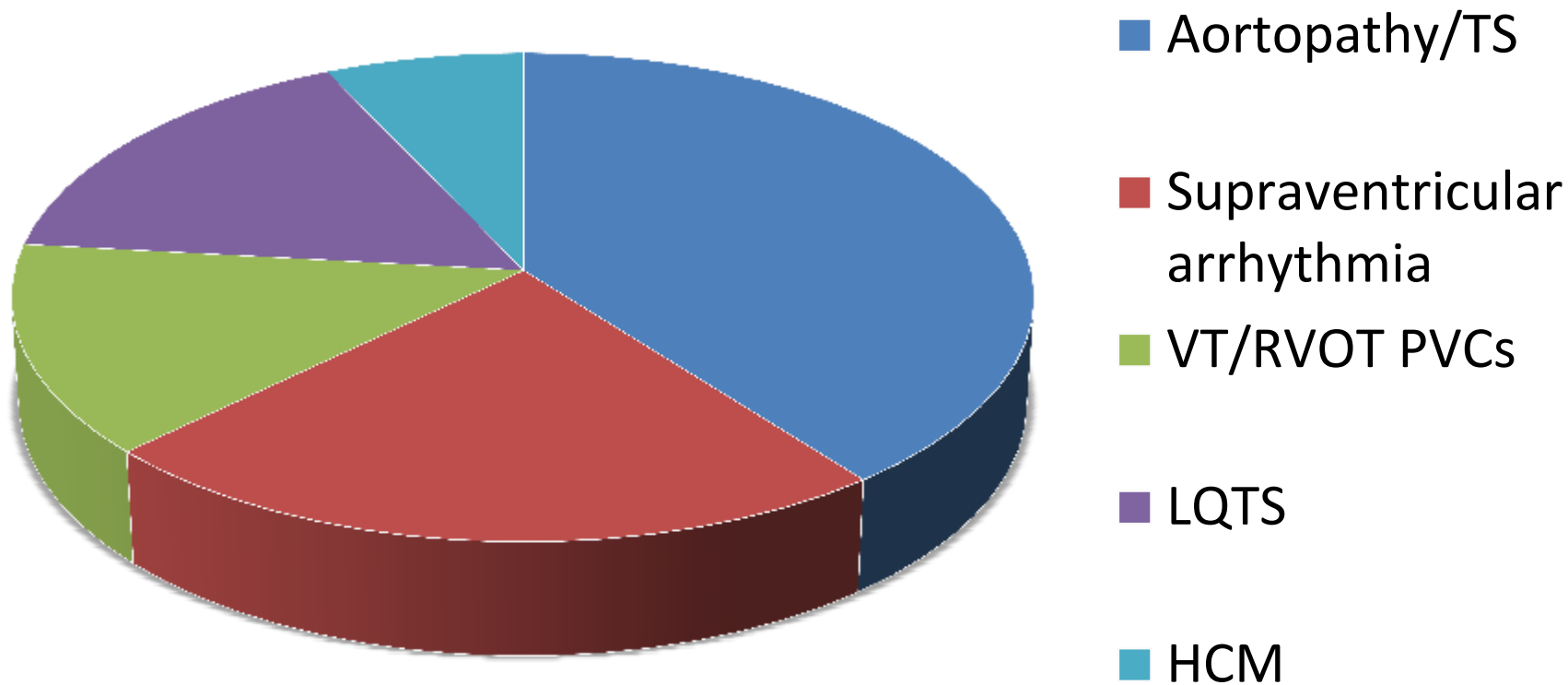


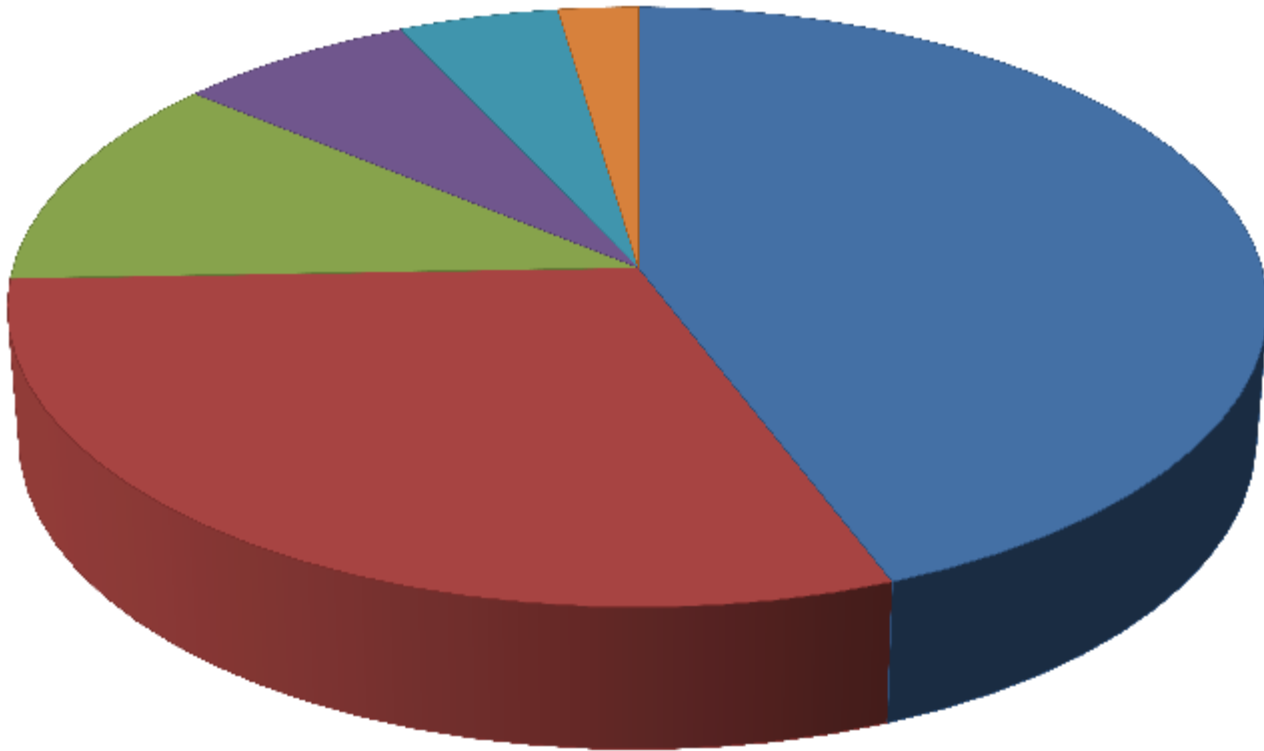
STATA software

RESULTS

A 3D illustration of the word "RESULTS" where each letter is a large, colorful block. Small white figures are shown pushing or supporting the letters: one for 'R', two for 'E', one for 'S', one for 'U', one for 'L', one for 'T', and one for 'S'. The letters are arranged in a line on a white surface with a reflection below them. The colors of the letters are: R (teal), E (red), S (pink), U (orange), L (blue), T (yellow-green), and S (teal).

	<b>Beta-blockers n = 43</b>	<b>Controls n = 57</b>
Age (years)	30	30
BMI (kg/m <sup>2</sup> )	25.7	24.5
% Caucasian	91	81





- Atenolol
- Bisoprolol
- Metoprolol
- Labetolol
- Nadolol
- Sotalol



	<b>Beta-blockers n = 43</b>	<b>Controls n = 57</b>
Gestation (weeks)	38	39
Mode of Delivery		
% LSCS	26	25
% forceps/ventouse	28	10
% NVD	46	65

	<b>Beta-blockers n = 43</b>	<b>Controls n = 57</b>
Fetal weight (g)	3052	3381
Birth weight centile	33.3	49.7

## 211g decrease in birth weight

(95% CI: 41-381g;  $p = 0.016$ )

correcting for fetal gender and gestation

## 12.8% more likely to deliver a SGA infant

(95% CI: 0.7-24.8%;  $p = 0.027$ )

## 9.3% more likely to deliver a SGA infant bw <3rd centile

(95% CI: 0.6-18.0%;  $p = 0.019$ )



# Maternal beta blockade

resulted in

more women delivering a SGA infant

an overall significant reduction in birthweight

compared to non-exposed women



All pregnant women prescribed beta-blockers should be made aware of this association

Where possible alternative medications should be prescribed