Table 2 Ratio of the peak flow velocity in the distal portion to that in the proximal portion

Patient no (type)	D/P
<i>Uniformly patent</i>	
4 (l-BT)	0.98
5 (central)	1.44
6 (l-BT)	1.19
7 (r-BT)	1.46
10 (r-BT)	1.20
12 (central)	0.89
<i>Segmentally stenosed</i>	
2 (r-BT)	1.95
3 (l-BT)	2.27
9 (l-BT)	1.87
11 (l-BT)	2.82
<i>Uniformly stenosed</i>	
1 (l-BT)	2.41
2 (l-BT)	1.39

D/P, ratio of proximal peak flow to distal peak flow. See footnote to table 1 for other abbreviations.

Marx *et al* reported that continuous Doppler echocardiography could detect shunt flow and could be used to estimate the drop in pressure across aorta to pulmonary artery shunts.³ They used the suprasternal notch or the supraclavicular window for Blalock-Taussig shunts and the left parasternal window for Waterston shunts. They did not, however, mention the morphology or size of the shunt vessels. Our study shows that the beam direction is vital when the peak flow velocity is being measured especially in patients with a segmentally stenotic shunt vessel.

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- 1 Hiraishi S, Horiguchi Y, Misawa H, *et al*. Noninvasive Doppler echocardiographic evaluation of shunt flow dynamics of the ductus arteriosus. *Circulation* 1987; 75:1146-53.
- 2 Allen HD, Sahn DJ, Lange L, *et al*. Noninvasive assessment of surgical systemic to pulmonary artery shunts by range-gated pulsed Doppler echocardiography. *J Pediatr* 1979;94:395-402.
- 3 Marx GR, Allen HD, Goldberg SJ. Doppler echocardiographic estimation of systolic pulmonary artery pressure in patients with aortic-pulmonary shunts. *J Am Coll Cardiol* 1986;7:880-5.

PLANTS IN CARDIOLOGY

Aconitine and arrhythmias

Various species of aconite, *Aconitum* (Ranunculaceae), such as wolfsbane and monkshood, have been known as deadly poisons since the time of ancient Greece (Medea used aconite to kill Theseus). Soon after the leaf or root is eaten a characteristic tingling spreads over the body, the voluntary muscles twitch, the pulse becomes irregular and weak, and death inexorably follows in a few hours. Animal studies in the nineteenth century showed that the alkaloid aconitine produced vagal slowing followed by an irregular rhythm; and in 1897 S A Matthews at Ann Arbor, using the myocardiograph, became the first to show that it causes atrial and ventricular fibrillation (*Journal of Experimental Medicine* 1897;2:593-606). In 1909 in the first paper of the new journal *Heart* A R Cushny showed that it caused pulsus alternans in dogs.

Despite its reputation aconite became a popular medicine and was used to treat neuralgia, fever, pericarditis, and nervous palpitation. In 1869 Sydney Ringer wrote "Perhaps no drug is more valuable than aconite." But in 1880 a patient became very ill when the source of his tincture was unknowingly changed to a different aconite root, and his physician Dr Meyer died after taking a dose to justify the safety of his prescription.

It was the work of David Scherf that established the special place of aconitine in experimental arrhythmias. In 1947 he showed that when aconitine was injected into the sinus node of dogs it was better than faradisation in producing episodes of atrial fibrillation or flutter that were long enough to assess the effect of antiarrhythmic drugs. Myron Prinzmetal used topical aconitine for his high-speed cinematograph studies of atrial arrhythmias in 1952.

The family Ranunculaceae has 58 genera and 1750 species mostly in temperate regions.

The Linnean Society.

Aconitum napellus L. Woodville W. *Medical Botany*. London: Woodville, 1790; volume 1: page 16.

Many of them are poisonous because they contain benzyl isoquinoline and other alkaloids, and some species of *Ranunculus* (buttercup) cause photodermatitis. The genera *Adonis* (pheasant's eye) and *Helleborus* (Christmas rose) contain cardiac glycosides but they are not used medicinally and neither are any other species.

It could still be rewarding to study the cellular mechanism of aconitine induced arrhythmias.

A HOLLMAN