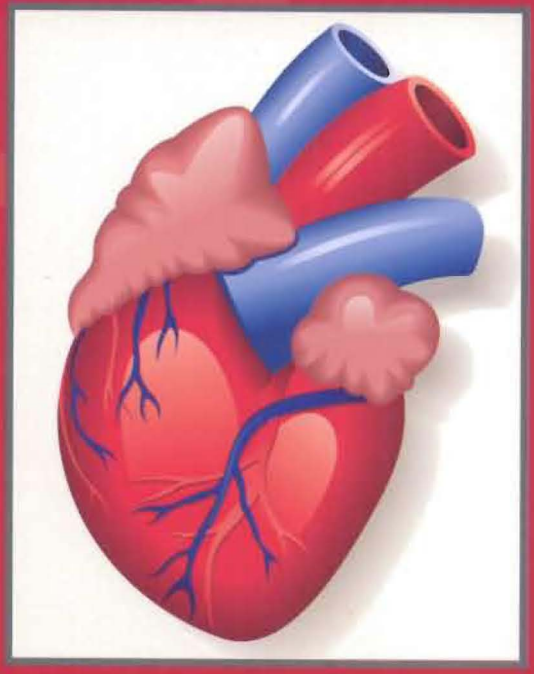
The Modern Role of BETA-BLOCKERS in Cardiovascular Medicine



John Malcolm Cruickshank

The Modern Role of β-Blockers (BBs) in Cardiovascular Medicine

John Malcolm Cruickshank, MD

2010
PEOPLE'S MEDICAL PUBLISHING HOUSE—USA
SHELTON, CONNECTICUT

TABLE 6-14 Different β-blockers and sexual dysfunction vs. placebo

β-blocker	Sexual dysfunction—% increase vs. placebo	Reference
Carvedilol (nonselective + α-blockade)	13.5	Fogari et al, 2001[123]
Propranolol (nonselective)	5.0	MRC—Mild Hypertension, 1985[31]
Atenolol (moderately β_1-selective)	3.0	Silvestri et al, 2003[119]
Bisoprolol (highly β_1-selective)	0.0	Broekman et al, 1992[124]

Of possible relevance is, in animal studies, the ability of agents like propranolol, atenolol, and metoprolol to reduce sperm mobility and reduce testosterone levels,[129] noted also in humans.[130] By contrast, high β_1-selectivity (i.e., bisoprolol and nebivolol) increase testosterone levels (and decrease estrogens) and have no adverse affects on penile blood flow in middle-aged men.[131]

8. Weight gain

Weight gain on traditional β-blockers is well-recognized.[1] The mean increase in weight is about 1.2 kg and occurs mainly in the first few months.[132]

The mechanism of this phenomenon is debatable. Of interest is the fact that certain genotypes of the β_2-receptor are linked to weight gain and central obesity and also development of hypertension and high sympathetic nerve activity).[133] Thus, β_2-blockade may be linked to weight gain, possibly via its depressive effect on thermogenesis . There is evidence for a β_2-mediated facultative thermogenic component in skeletal muscle, and there is also 25% reduction in thermogenic response to food.[132] It has been noted that propranolol can decrease shivering thermogenesis—only 1% of postoperative patients on propranolol, vs. 30% in control, shivered.[134]

In support of the β_2-receptor involvement in weight gain is the fact that low-dose, highly β_1-selective bisoprolol (compared with losartan) was associated with a small weight loss after 1 year of therapy[65]—Table 6-15. It is also possible that the presence of an α-blocking property may modify the effects of β_2-blockade; in