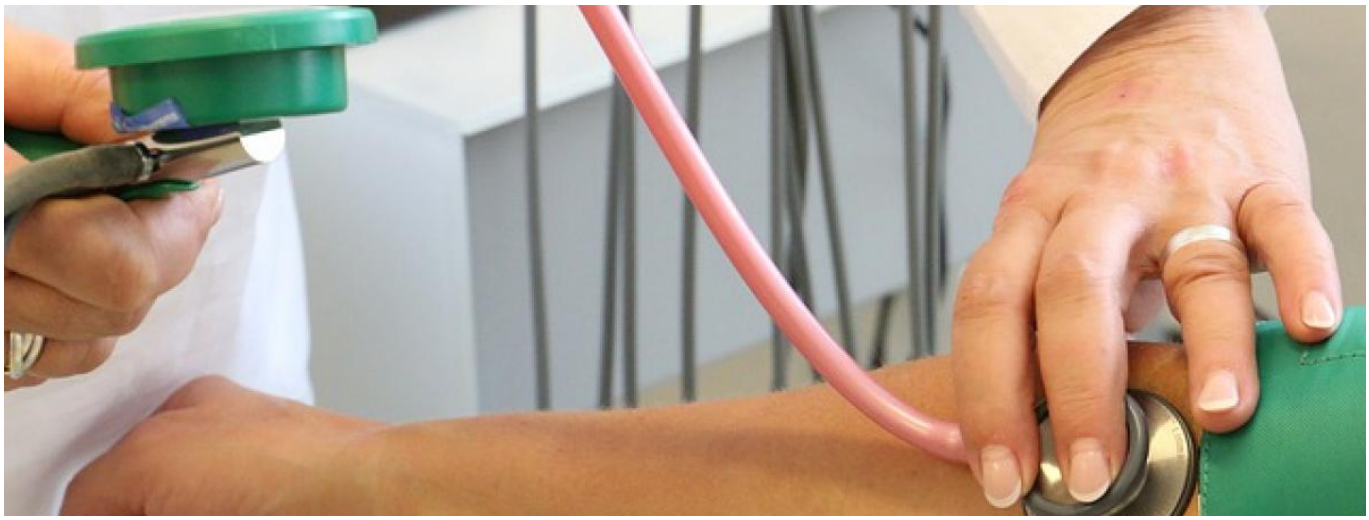
published in Reader's Digest,
17 May 2015

link to Reader's Digest article [1]

drugs [2] heart [3]



“Of course I’m terribly sad. I’m in shock. I wasn’t trying to hide anything.” This was the response of the Swedish wheelchair curler Glenn Ikonen, suspended for taking metoprolol at the 2010 Paralympics. He had been prescribed the drug to control high blood pressure, not to improve sporting ability.

Metoprolol is one example of the group of drugs called beta blockers, banned by the World Anti-Doping Agency in 1999 because some sports people take them to reduce tremor and steady nerves, although they can also cause sleepiness and dizziness, hardly ideal for winning a race.

Outside the sporting world, beta blockers have transformed the face of medicine since the 1960s, being prescribed for high blood pressure, angina, abnormal heart rhythms and heart failure. Beside their cardiac effects, beta blockers can also be used to treat migraine, glaucoma and anxiety.

Few drugs show such a constellation of effects, but beta blockers achieve this by blocking the role of adrenaline in the body (by binding to beta receptors on tissue, hence the name), and adrenaline acts throughout the body, including on the heart, blood vessels, airways, kidney and liver.

Examples of beta blockers in use today include propranolol, atenolol, bisoprolol and metoprolol.

Some effects of beta blockers are easier to explain than others. In reducing blood pressure, for example, it is known that beta blockers act on the heart to slow down and decrease the strength of the heartbeat, and on the kidneys to widen blood vessels and reduce the release of a hormone (aldosterone) which normally raises blood pressure.

A role for beta blockers in heart failure is less easy to explain since, by definition, beta blockers reduce the heartbeat, and this would surely have the potential to further decrease the output of a failing heart? The evidence proves otherwise, with a large scale clinical trial called MERIT-HF showing that metoprolol improves survival, perhaps by allowing the heart to fill up more between each heartbeat due to a slower heart rate.

The National Institute for Health and Clinical Excellence advocates offering beta blockers after a heart attack, and

several trials in the 1980s support this decision. However, the world of cardiac pharmacology is changing at a fast pace, with the advent of many new drugs. Interestingly, the COMMIT trial of 2005 has called into question the usefulness of beta blockers in some cases of heart attacks, as newer blood thinning drugs seem to offer equivalent protection against heart attacks, and adding a beta blocker gave no extra benefit.

Even if beta blockers are to some degree superseded by new drugs, their use is widening in patient groups previously considered ineligible due to possible aggravation of existing conditions: some patients with diabetes, peripheral vascular disease and asthma are now prescribed beta blockers for their heart and tolerate them well.

“Something old, something new” might sum up the cardiologist’s drug cabinet of the future. There are a lot of exciting new drugs, but beta blockers look certain to remain an important medicine.

Links
[1] http://www.readersdigest.co.uk/health/health-centre/all-you-need-know-about-beta-blockers [2] https://helencowan.co.uk/../tags/drugs [3] https://helencowan.co.uk/../tags/heart