

## MAOI treatment and Blood Pressure Changes

The degree of postural hypotension, that is reduction of blood pressure, when going from the sitting (or lying) position, to the standing position, that is induced by usual doses of MAOIs, is easily measurable. It is the simplest and most useful indicator of the likely minimum therapeutic dose.

This note discusses how to monitor the blood pressure and how to use the results to guide dosage adjustment (see bar chart below).

The usual dose of tranylcypromine is 30 mg – 50 mg per day, usually split in two; the larger dose early a.m (before rising), and second dose ~ 2 – 4 hrs later, before noon. Of those who are going to benefit approximately 95% will respond in that range (estimate from my experience of treating approximately 2,000 cases). I would estimate that 20 mg tranylcypromine is enough in only ~ 1-2% of cases. That also corresponds with the observation that a similarly low percentage of people get a measurable blood pressure drop on only 20 mg.

The few research papers that have looked at BP in relation to MAO inhibition, indicate that BP changes reflect the degree of inhibition of monoamine oxidase (1), but even now neither the mechanism nor relationship is certain (2).

Monitoring the blood pressure is the only available practical means of estimating the magnitude of the effect of an MAOI drug because very few laboratories are equipped to measure platelet MOA inhibition. It is not helpful to measure blood levels of MAOIs.

TCAs can also be monitored by observing the BP drop, but blood levels are also easy and useful. The most recent review of the pharmacology of TCAs is my paper in the British Journal Pharmacology (3) which is available free over the Internet

<http://onlinelibrary.wiley.com/doi/10.1038/sj.bjp.0707253/pdf>

## Practical Management, Blood Pressure Change

The assessment of blood pressure using a sphygmomanometer is a long-standing and routine technique in medicine. It is a shame that most psychiatrists who try to manage patients on MAOIs do not routinely measure the degree of postural hypotension as they adjust MAOI doses. They should. Also, very few papers in the 50 year history of the use of MAOIs have studied blood pressure changes.

The graph below illustrates typical changes when MAOIs are administered. I (meaning me, not a nurse or other assistant) used to record blood pressure in all patients I saw and enter the results into a

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computer program that automatically plotted a graph that I could show to patients to illustrate what was happening (see below for the precise routine for BP measurement). The graph below is based on results averaged for a substantial number of real cases.

My usual strategy was to increase the dose fairly rapidly until definite, but not problematic, postural hypotension was present. It is **unusual** to get significant BP drop with 20 mg, but at a dose of 30 mg a small, often transient, drop may well be seen (exemplified by day 4 on bar chart).

Assuming the starting dose is 30 mg then the typical response of the BP is as depicted in the graph. The initial response is a modest transient drop in blood pressure immediately on standing, (white bar, first standing measurement), which then rapidly recovers to the baseline level (grey bar). This illustrates why it is necessary to do two measurements and why the first one needs to be **immediately** on standing.

If, after 3 – 5 days on 30 mg there is no significant blood pressure drop and if there are no troublesome side effects, then it is appropriate to increase the dose to 40 mg, then again, if no significant blood pressure drop, after 3 – 5 days to 50 mg, whilst monitoring blood pressure (sitting x 1 and standing x 2; morning and evening).

If there is a small but consistent drop in blood pressure (e.g. of about 10-15 systolic, on going from sitting to standing, as exemplified by days 11 to 14 on the graph) then it is reasonable to maintain the same dose for a further week or two to assess response and the degree of adaption of BP, because if one leaves that dose the same for a couple of weeks the degree of blood pressure drop is likely to lessen.

That is the course that I would follow when seeing somebody as an outpatient, but if someone was in hospital and more seriously ill then it might well be reasonable to increase the dose more rapidly, unless the patient (especially if elderly) was so faint that they were in danger of injury from falling.

Note that only about 50 per cent of those who report the *subjective* feeling dizziness or faintness actually have a low blood pressure. That emphasises the importance of regular sitting and standing blood pressure measurements before and during treatment.

One can increase the dose rather more slowly if, for various different reasons, this seems appropriate. How quickly the dose is increased is most logically decided by the severity of the symptoms, the timeframe over which improvement is desirable, and the attitude taken towards risks and side effects. Some people prefer to adopt the attitude of “slow and steady wins the race”, others veer more towards the approach of “nothing ventured nothing gained”. It is a personal choice. One point worth noting is that generally speaking side-effects do tend to get less as

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the body becomes accustomed to a given dose of the drug. That is well illustrated by the way the blood pressure drop gets less over a period of a week or two.

Figure 1. Orthostatic blood pressure changes on Parnate

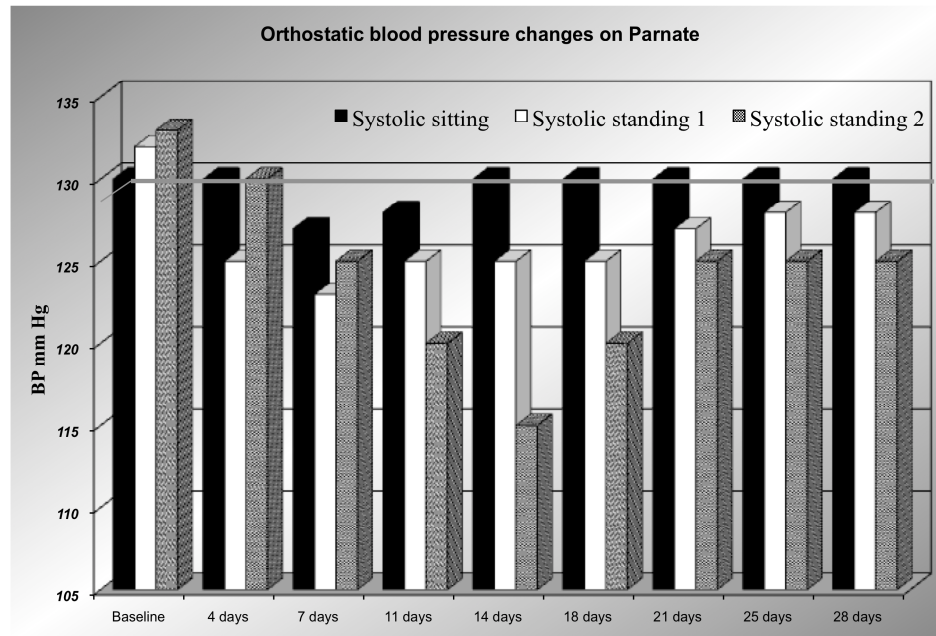


Fig. 1 legend

*Standing 1, done immediately on rising from sitting, standing 2 done after 1 minute.*

*Data is illustrative values taken from author's computer data base of patient data.*

- *Baseline: before treatment, standing BP is slightly higher than sitting (normal response).*
- *Day 4, small initial drop with rapid recovery to baseline level*
- *day 7, some recovery but not to baseline and 2<sup>nd</sup> standing is higher than the 1<sup>st</sup>*
- *day 11, second standing value lower than first*
- *day 18, degree of postural drop lessening*
- *days 21-28, equilibrium with 2<sup>nd</sup> standing BP below baseline*

NB. A good paper on countering problems caused by postural hypotension is "Preventing and treating orthostatic hypotension: As easy as A, B, C." (4).

#### References

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