Drugs and the risk of worsening the weakness in patients with Myasthenia Gravis

Updated March 2014

Many medications have been reported to worsen weakness in patients with MG.

Proof that the drug was responsible for an exacerbation in MG is often very weak. In my experience, more MG patients can take these medications without ill effect than will become weak because of them. However, caution is still advised.

The risk that a given medication will exacerbate MG must be balanced by the need for that particular drug, the lack of a suitable substitute and the gravity of the situation requiring the use of the drug. None of these medications are absolutely contraindicated in patients with MG. However,when possible substitutes should be used.

If there are no acceptable substitutes, the patient should be monitored closely for signs of worsening of MG. If respiratory or bulbar (swallowing) functions are already seriously compromised, consideration should be given to monitoring in an inpatient setting when the medication is started (I haven't had to do this once in over a decade of managing many patients with MG).

Drugs which are most consistently reported as potentially being a problem are *underlined*:

Antibiotics

- Aminoglycosides
  - *Neomycin, gentamicin, streptomycin, kanamycin, tobramycin*
- Macrolides
  - *Erythromycin, clarithromycin, azithromycin (Zpac), etc*
- **Fluroquinolones CONTRAINDICATED**
  - ***Cipro (ciprofloxacin),Factive(gemifloxacin), Levoquin(levofloxacin), Avelox(moxifloxacin), Noroxin(norfloxacin), Floxin(ofloxacin)***
- Others
  - *Amikacin, Polymixin B, colistin*
  - *Tetracyclines, oxytetracyclines*
  - *Lincomycin and clindamycin*

Cardiovascular

- Beta blockers
  - *Including topical/ocular- probably safe!*
- Quinidine
- Procainamide
- Calcium channel blockers
  - *Verapamil, nimodipine and perhaps other calcium channel blockers – also probably safe!*
- Clonidine
- Bretylium (high doses)
- ACE inhibitors
  - *May potentiate bone marrow suppression if on azathioprine*

CNS active

- Diphenylhydantoin/Phenytoin
- Trimethadione
- Lithium
- Chlorpromazine, Promazine
- Trihexyphenidyl
- Morphine and other narcotics, benzodiazepines & barbiturates
  - *Probably safe unless significant bulbar or respiratory compromise is present*
- Amantadine

Anti-rheumatic

- Chloroquine
- D-penicillamine
  - *Can cause MG in some individuals, usually reversible*
- Prednisone
  - *High doses can temporarily worsen MG within first 1-2 weeks. There is NO reaction between mestinon and prednisone!*

Anaesthetic agents

- Non-depolarizing agents
  - *Pancuronium, Vecuronium, Atracurium - increased sensitivity in MG*
- Succinylcholine
  - *Decreased effect in MG, increased if on pyridostigmine*

Other

- Allopurinol
  - *Increases risk of azathioprine toxicity*
- Procaine and lidocaine (iv)
  - *No risk for local anaesthetics, dental analgesia OK*
- Magnesium
  - *Milk of Magnesia or Citrate of Magnesia on a regular basis or as test prep*
  - *If given at doses to raise serum Mg^{++} level*
- Bretylium
- Topical ophthalmic drugs
  - *timolol, beaxol, echothiophate – probably safe*
- Quinine
  - *Probably safe in beverages!*
- Lactate
- Citrate anti-coagulant
- Diphenhydramine (i.e. Benadryl and all older anthistamines-use with caution. Loratadine, cetirizine acceptable)
- Emetine

In all cases, medications should be considered as the cause of an unexplained deterioration in a myasthenic patient.

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