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## **What You Should Know About Ototoxic Medications**

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Ototoxic medications are those drugs that have the potential to cause damage to the inner ear structures, which may result in temporary or permanent loss of hearing or an aggravation of an existing sensorineural hearing loss.

If you have an existing sensorineural hearing loss, regardless of the cause, when using ototoxic medications, you are more vulnerable to aggravation of that hearing loss.

As a result of using ototoxic medications, the degree of hearing loss that occurs and the amount of recovery that follows depends upon the amount and duration of the use of that particular medication. If you are consuming more than one ototoxic medication, you are even more vulnerable to developing a sensorineural hearing loss or aggravation of your existing sensorineural hearing loss.

Some ototoxic medications such as aspirin and aspirin-containing drugs - regardless of the amount and duration of usage - when discontinued, result in complete recovery of hearing and cessation of associated symptoms such as tinnitus. (Ed. note: A few patients have reported to us that their tinnitus continued after aspirin use was stopped.)

### **GUIDELINES TO FOLLOW**

In regard to the use of ototoxic medications, whether they are over-the-counter or prescription, there are several important facts you should know and several important rules you should follow:

- ❑ Always inform your doctor that you have a sensorineural hearing loss or nerve-type hearing loss.
- ❑ Always ask your doctor, when he or she is prescribing new medications for you, to inform you of any potential side effects, especially if the medication is ototoxic.
- ❑ Always read the labels or ask your pharmacist about the potential ototoxic effects of over-the-counter medications.
- ❑ Always be aware of the early warning signs of ototoxicity.

### **Signs of Ototoxicity, Listed in Order of Frequency**

1. The development of tinnitus (noises in the ears) in one or both ears.
2. The intensification of existing tinnitus or the appearance of another sound that didn't exist before.
3. Fullness or pressure in your ears - other than being secondary to an upper respiratory infection.
4. The awareness of a hearing loss in an unaffected ear or the progression or fluctuation of an existing loss.
5. The development of vertigo or spinning sensation usually aggravated by motion which may or may not be accompanied by nausea.

Should any of these symptoms develop while taking any medication, stop the medication immediately and call your doctor.

## OTOTOXIC MEDICATIONS

Finally, you should be aware of the common ototoxic medications, how they are prescribed, and for what conditions they are given.

The following is a simplified list of ototoxic medications and represents the most common drugs. (There are many other medications that have been listed as potentially ototoxic; however, the incidence is insignificant. Consult your physician to be sure.) Keep this list for ready reference.

1. SALICYLATES - Aspirin and aspirin-containing products
  - Toxic effects usually appear after consuming an average of 6-8 pills per day.
  - Toxic effects are always reversible once medications are discontinued.
2. NONSTEROIDAL ANTI-INFLAMMATORY DRUGS (NSAIDS) - Advil, Aleve, Anaprox, Clinoril, Feldene, Indocin, Lodine, Motrin, Nalfon, Naprosyn, Nuprin, Poradol, Voltarin
  - Toxic effects usually appear after consuming an average of 6-8 pills per day.
  - Toxic effects are usually reversible once medications are discontinued.
3. ANTIBIOTICS - Aminoglycosides, Erythromycin, Vancomycin
  - a. *Aminoglycosides* - Streptomycin, Kanamycin, Neomycin, Gentamycin, Tobramycin, Amikacin, Netilmicin. These medications are ototoxic when used intravenously in serious life-threatening situations. The blood levels of these medications are usually monitored to prevent ototoxicity. Topical preparations and eardrops containing Neomycin and Gentamycin have not been demonstrated to be ototoxic in humans.
  - b. *Erythromycin* - EES, Eryc, E-mycin, Ilosone, Pediazole, and new derivatives of Erythromycin - Biaxin, Zithromax. Erythromycin is usually ototoxic when given intravenously in dosages of 2-4 grams per 24 hours, especially if there is underlying kidney insufficiency. The usual oral dosage of Erythromycin averaging one gram per 24 hours is not ototoxic. There are no significant reports of ototoxicity with the new Erythromycin derivatives since they are given orally and in lower dosages.
  - c. *Vancomycin* - Vancocin. This antibiotic is used in a similar manner as the aminoglycosides; when given intravenously in serious life-threatening infections, it is potentially ototoxic. It is usually used in conjunction with the aminoglycosides, which enhances the possibility of ototoxicity.
4. LOOP DIURETICS - Lasix, Edecrin, Bumex

These medications are usually ototoxic when given intravenously for acute kidney failure or acute hypertension. Rare cases of ototoxicity have been reported when these medications are taken orally in high doses in people with chronic kidney disease.
5. CHEMOTHERAPEUTIC AGENTS - Cisplatin, Nitrogen Mustard, Vincristine

These medications are ototoxic when given for treatment of cancer. Maintaining blood levels of the medications and performing serial audiograms can minimize their ototoxic effects. The ototoxic effects of these medications are enhanced in patients who are already taking other ototoxic medications such as the amino- glycoside antibiotics and the loop diuretics.
6. QUININE - Aralen, Atabrine (for treatment of malaria), Legatrin, Q-Vel Muscle Relaxant (for treatment of night cramps)

The ototoxic effects of quinine are very similar to aspirin and the toxic effects are usually reversible once medication is discontinued.

If you must take ototoxic medications, you should have your hearing monitored with periodic audiological evaluations.

Just as you are responsible for your overall health, you can take responsibility for the preservation of your hearing or your existing hearing reserve. Being aware of ototoxic medications and their potential warnings is a good safe-guard to protect your hearing - and a sound investment!

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