"Acetaminophen – how much is too much?"

Live Healthy and Be Well

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A while back, I received a very nice hand written letter from Mrs. Carver, who lives nearby in Tiger. She has heard some recent news reports and has some concerns about different medicines taken for pain relief – mainly Acetaminophen, better known to many of us as "Tylenol." She has noticed looking through her medicines, and it is true, that this drug is widespread in use. It can be taken by itself, but it is also included as a component in many other medicines taken for pain relief, and her question has to do with its effectiveness as a pain reliever, and also "how much is too much?" I think that Mrs. Carver's concerns are valid, because Acetaminophen, called *Paracetamol* elsewhere in the world, is the most common cause of acute liver failure in the USA and the United Kingdom!

Acetaminophen belongs to a class of drugs called NSAIDs, which stands for *Non-Steroidal Anti-Inflammatory Drugs*, although it is arguably one of the weaker members of that class. It does not seem to have a strong anti-inflammatory ability, but is used more as an *analgesic* (pain medicine), and *anti-pyretic* (fever reducer). It works by acting as an inhibitor of *Cyclooxygenase-2* (COX-2). It is good for headaches, fevers, muscle and joint sprains and strains, and is a common ingredient in many "cold and flu" remedies. It seems to work better as a pain reliever when combined with caffeine. Also known as *APAP*, it is sometimes combined with narcotic pain medicines to enhance their effect (look for an article on this class of drugs in the near future). Although not a particularly strong pain medicine or anti-inflammatory by itself – taking larger doses to enhance effect is NOT recommended, as overdoses of this medicine can cause damage to the liver, sometimes temporary and sometimes permanent.

Acetaminophen is broken down and processed (metabolized) in the liver upon ingestion. It is not the drug itself that hurts the liver, but some of the breakdown products that occur when it is metabolized. The main culprit of this process is *N-acetyl-p-benzoquinoneimine* (NAPQI). This dangerous by-product depletes the liver's natural antioxidant *glutathione* and directly damages cells in the liver, which can lead to liver failure, or at least damage and reduced liver function. Things that make this worse or increase the likelihood include excessive chronic alcohol intake, fasting or anorexia nervosa, and the use of certain drugs such as isoniazid (a medicine taken to treat TB).

Treatment is aimed at removing the Acetaminophen from the body and replacing the depleted glutathione in the liver – which protects and helps it to restore itself. Activated charcoal can be used to decrease absorption of Acetaminophen if the patient presents for treatment soon after the overdose. The antidote *acetylcysteine* acts as a precursor for glutathione, helping the body regenerate enough to prevent damage to the liver. Also, *N-acetylcysteine* can neutralize NAPQI by itself as well. In extreme cases of severe liver damage, a liver transplant is often required if the liver cannot repair itself in time, because "you can't LIVE without a LIVEr!" Patients

treated early have a good prognosis, whereas patients that develop major liver abnormalities typically have a poor outcome.

So, given this background, the main thing we want to know is "What is a safe dose to prevent this problem?" Generally speaking, Tylenol by its various names used to be dispensed as a 325 mg tablet, and a 500 mg tablet. To "take two and call me in the morning" would thus be a total dose of either 650 mg or 1000 mg, and was usually taken every 4 to 6 hours. Because of this problem we are discussing, the 500 mg tablet has all but gone away, and those used to mix with other drugs went from the 500 mg to the 325 mg only. The accepted "safe dose" is 3 grams (3000 mg) or less a day. But, I like to put a little more "buffer" in that and say that about 2600 mg per day is safe. This would be the equivalent of taking two 325 mg tablets every 6 hours (four times a day). This dose could be taken on a regular basis safely, however, if after a while you are not getting relief from your symptoms – you should see your provider and try to treat the cause and not just the symptoms.

Remember when I stated that Acetaminophen is sometimes better as a pain reliever when combined with caffeine? Well, this is the basis for a well-known brand of headache powders commonly sold and used here in the South. The version known as "extra strength headache powders" are sold over the counter, and contain 520 mg aspirin, 260 mg acetaminophen and 32.5 mg caffeine, which differs from other similarly powdered products under the same brand name. So, there is not much Acetaminophen in these powders, and people do seem to get relief quicker by taking them in the powder form. I have noticed that, although these powders do not contain any narcotics, they do seem to be somewhat habit forming to people, who may "knock back" quite a few packets a day. Be careful about ingesting them on an empty stomach, as these type of medicines can cause gastritis (inflammation of stomach lining) or even lead to ulcer disease if misused.

We really do enjoy hearing from you with any questions, concerns, or ideas for future columns and/or health and wellness related issues for the *Georgia Mountain Laurel*. Please send an email to rabundoctor@gmail.com, or call us at 706-782-3572, and we will be sure to consider your input. This and previous articles can be now be found on the web at www.rabundoctor.com in an archived format. If you use Twitter, then follow us for health tips and wellness advice @rabundoctor. Until next month, live healthy and be well!