

PROPRANOLOL FOR INFANTILE HEMANGIOMAS

Infantile hemangiomas are benign (non-cancerous) collections of blood vessels in the skin. They typically undergo a period of rapid growth for several months before they eventually begin to slowly improve.

WHEN DO INFANTILE HEMANGIOMAS NEED TO BE TREATED?

Most hemangiomas do not require any treatment; however, a small number do require treatment because of complications potentially caused by the hemangioma. Sometimes treatment is needed if the hemangioma is growing too large or if there is a risk of permanent scarring or disfigurement (damage to the appearance). Treatment may also be necessary if the hemangioma is affecting a vital function, such as vision, eating or breathing, or to help with healing when the skin overlying the hemangioma starts to break down; this is called ulceration. Propranolol has become the most widely used medication for the treatment of serious complications from hemangiomas.

WHAT IS PROPRANOLOL AND HOW DOES IT WORK?

Propranolol is a “beta-receptor blocker”. Beta-receptors are present on many tissues in the body including the heart, lungs, eyes and blood vessels. Propranolol has been used for many years in the treatment of high blood pressure and irregular heartbeats as well as migraine headaches. While the exact way in which it works on hemangiomas has not been identified, it is known that propranolol can constrict blood vessels (make them narrower), decreasing the amount of blood flowing through them. This can make the hemangioma softer and less red. Propranolol also seems to limit the growth of hemangioma cells, so that the size of the hemangioma is reduced over time. The effects of propranolol can be quite rapid, with most patients showing improvement within the first few days to weeks on the medication. Propranolol has been approved by the Food and Drug Administration (FDA), specifically for the treatment of hemangiomas.

ARE ANY TESTS NEEDED BEFORE STARTING PROPRANOLOL?

Occasionally, your doctor will order tests to be sure your child can safely take the medication. These may include an electrocardiogram (EKG), or occasionally other laboratory tests, depending upon your child's history and physical examination, and the family history. If there are several hemangiomas on your child's skin, an ultrasound of the abdomen may be ordered to check for hemangiomas in the liver or spleen. You should speak with your doctor about what specific testing may be needed for your child.

WHAT ARE THE POSSIBLE SIDE EFFECTS OF PROPRANOLOL?

Like any medication, propranolol can have side effects, but they are uncommon. Possible side effects include:

Bradycardia (slow heart rate) and hypotension (low blood pressure): Most infants on propranolol continue to have a heart rate and blood pressure within the normal range, or with changes so mild that they do not cause any effects.

Hypoglycemia (low blood sugar): This is extremely rare, but can cause weakness, drowsiness, irritability, or very rarely, seizures. Early signs can include excessive fatigue, shakiness, nervous appearance and sweating. Low blood sugar is more likely to occur when a child is not eating normal amounts or has gone long periods without eating. To help prevent this, propranolol should always be given right after your child has eaten, and if your child temporarily decreases feeding (for example, with an illness), the medication should be held.

Bronchospasm (temporary narrowing of the airways): This can lead to wheezing and coughing, usually associated with colds or flu-like illnesses. It is recommended to hold the propranolol until your child is feeling better.

Sleep disturbance: This may include difficulty falling or staying asleep, sleeping more than normal, or nightmares or night terrors. These are usually noticed during the first few weeks of taking propranolol and often improve with time.

Other possible side effects: Cool hands and feet and, rarely, gastrointestinal problems like diarrhea or constipation.

If your child is taking propranolol, it is important to notify your doctor with any concerning changes in his/her health or behavior, to see if they might be related to the medication.

HOW IS PROPRANOLOL TAKEN?

Propranolol is taken by mouth, most often as a liquid, and the dose will be calculated based on your child's weight. It is usually given two (or sometimes three) times per day, at least 6 hours apart. As previously mentioned, propranolol should always be given with food.*

* It is very important that your child is fed regularly while taking propranolol.

The American Academy of Pediatrics (AAP) recommends a breastfed newborn should be fed every 1-3 hours, and after 4 weeks of age, every 2-4 hours. As they grow older, breastfeeding becomes more "on demand". For formula fed infants, feeding should occur every 3-4 hours during the first month, every 4 hours after one month of age, and every 5-6 hours after 6 months of age.

HOW LONG DOES TREATMENT WITH PROPRANOLOL LAST?

The length of treatment will depend upon your child's individual situation, but most infants are treated until about 12-18 months of age to ensure a maximum response to the medication, and to try to decrease the chance of rebound (repeated growth of the hemangioma after stopping the medicine). Your physician may choose to gradually lower your child's dose over time to see how the hemangioma responds.

Although it is difficult to predict how any individual hemangioma will evolve, it is important to remember their natural course, as most hemangiomas are significantly improved by 4-5 years of age and the remainder may continue to improve even longer.

There are other therapies your doctor may consider, if needed. Below is a reference to an excellent article, which provides more practical information on the treatment of infantile hemangiomas with propranolol.

Propranolol treatment of infantile hemangiomas: anticipatory guidance for parents and caretakers.

Pediatr Dermatol 2013 Jan-Feb;30(1):155-9.

Contributing SPD Members:

Brandi Kenner-Bell, MD, Liborka Kos, MD

Committee Reviewers:

Brandi Kenner-Bell, MD, Andrew Krakowski, MD

Expert Reviewer:

Anthony J. Mancini, MD

The Society for Pediatric Dermatology and Wiley Publishing cannot be held responsible for any errors or for any consequences arising from the use of the information contained in this handout. Handout originally published in Pediatric Dermatology: Vol. 33, No. 5 (2016).

© 2016 The Society for Pediatric Dermatology