

# Hemangioma Propranolol Care Guideline

## Inclusion Criteria:

- Children diagnosed with symptomatic Infantile Hemangioma (IH) or Hemangioma of Infancy (HOI)

## Exclusion Criteria:

- Contraindication to Propranolol, including bronchospasm, cardiac abnormalities/disease, CNS vascular abnormalities other than hemangiomas

## Assessment

- Document Allergies
- VS per protocol
- Obtain the following prior to starting propranolol:
  - CBC with Diff/Plts (CBC), Panel 18 (PAN 18), DIC profile (DICP)
  - Electrocardiograph (EKG)
  - Echocardiogram (ECHO)
  - Possible Ultrasound; Doppler, MRI, MRA

## Treatment

- Admit to Hematology Service
- Obtain Cardiology Consult for Propranolol clearance
- Obtain ENT Consult if hemangioma is in the beard distribution
- Propranolol Hydrochloride 0.5 mg/kg/**dose** oral q. 12 hr.; increase to 1 mg/kg/**dose** oral q. 12 hr. if tolerated with no adverse effects for 24 hours
- Measure BP, heart rate, temperature and blood glucose level prior to each dose of propranolol and one (1) hour after each dose of propranolol
- Continuous cardio-respiratory monitoring – telemetry
- Diet for age
- Activity as tolerated
- Accurate I+O
- Peripheral IV and Saline Lock-peripheral

## Continued Considerations

- EKG prior to discharge.
- Signs of adverse effects of propranolol include lethargy, restlessness, difficulty breathing, cool clammy skin, delayed capillary refill, and decreased appetite.
- Abdominal ultrasound may detect visceral lesions or dilatation of the hepatic artery or portal vein (evidence of early cardiac compromise) and is recommended in the presence of 5 or more cutaneous hemangiomas.
- May evaluate segmental hemangiomas, suggesting PHACES syndrome, with transcranial Doppler, magnetic resonance imaging (MRI) and magnetic resonance angiography (MRA) of head and neck.
- Ultrasound may be used to measure lesion maximal thickness and resistivity.

## Discharge Criteria

- Discharge when vital signs stable, tolerating propranolol.
- Instruct to make appointment for next Multidisciplinary Hemangioma Clinic.

## Recommendations/Considerations

- Infantile Hemangiomas (IH), the most common vascular tumor of infancy, generally not present or minimally at birth, undergo rapid growth during early infancy, followed by slower growth, then gradual involution.
- IH may be associated with significant morbidity. Tumors requiring treatment include those involving the periorbital area, central face, airway, skin folds, and anogenital area, sites at high risk for ulceration, dysfunction, or disfigurement.
- Propranolol hydrochloride, a non-selective beta blocker, appears to be associated with reducing the size and color of hemangiomas of the head and neck, and is first-line treatment of orbit and larynx hemangiomas.
- Duration of therapy varies from 2-10 months
- Compared with oral corticosteroids, use of propranolol for IH has been associated with higher rates of lesion clearance, fewer adverse effects, fewer surgical interventions after treatment, and lower cost.
- Systemic corticosteroids, i.e. prednisolone, previously considered first-line therapy, halt proliferation rather than induce tumor shrinkage.
- Patients should be monitored closely for adverse effects of propranolol, including **hypotension, bradycardia, hypoglycemia**, bronchospasm, congestive heart failure, sleep disturbance, diarrhea, and hyperkalemia.
- For otherwise healthy children >3 months of age, initiation of propranolol therapy may be appropriate in the outpatient setting; duration until age 10-12 months.

## Patient Education

- Propranolol side effects, i.e. lethargy, poor feeding, loose stools, and/or bronchospasm

## References

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- Antaya, R. Infantile Hemangioma Medication; Beta-adrenergic Blocker Class Summary. Medscape Reference Drugs, Diseases, and Procedures. Jan 11, 2012. <http://emedicine.medscape.com/article/1083849-medication>
- Fuschsman, C, et al. Archives of Otolaryngology –Head and Neck Surgery 2011; 137(5):471-478. <http://archotol.ama-assn.org/cgi/content/full/137/5/471>
- Gagnon, L. Off-Label use of propranolol for infantile hemangioma requires watchful eye. Dermatology Times, April 1, 2010 <http://dermatologytimes.modernmedicine.com/dermatologytimes/Modern+Medicine+Now/Off-label-use-of-propranolol-for-infantile-emangi/ArticleStandard/Article/detail/663467>
- Hogeling M, et al. A Randomized Controlled Trial for Infantile Hemangiomas. Pediatrics 2011; 128; e 259. <http://pediatrics.aappublications.org/content/128/2/e259>
- Lawley, L, et al. Propranolol Treatment for Hemangioma of Infancy: Risks and Recommendations. Pediatric Dermatology 2009, Vol.26 No.5 610-614. <http://onlinelibrary.wiley.com/doi/10.1111/j.1525-1470.2009.00975.x/full>
- Puttgen K, Lucky A, et al. Topical Timolol Maleate Treatment of Infantile Hemangiomas. Pediatrics, September 2016, 138 (3) 1-9. <http://pediatrics.aappublications.org/content/138/3/e20160355>
- Price C, et al. Propranolol vs Corticosteroids for Infantile Hemangiomas; A Multicenter Retrospective Analysis. Archives of Dermatology 2011; 147 (12):1371-1376. <http://archderm.ama-assn.org/cgi/content/full/147/12/1371>
- Sans, Veronique. Propranolol for Severe Infantile Hemangiomas: Follow-Up Report. Pediatrics 2009; 124:e423. <http://pediatrics.aappublications.org/content/124/3/e423>
- Stark, E. Propranolol for infantile haemangiomas: a review. Archives of Disease in Childhood 2011; 96: 890-893. <http://adc.bmj.com/content/96/9/890.full>