CASE REPORT

Navigating Infantile Hemangiomas: A Case and Insight for the General Pediatrician

Bliss Colao, BS[1]; Michael Lavery, MD[2]; Kendall Steadmon, MD[3]
[1]University of Florida College of Medicine
[2]Department of Dermatology, University of Florida
[3]Department of Pediatrics, University of Florida

ABSTRACT

Infantile hemangiomas, characterized by abnormal blood vessel growth, are common benign tumors affecting 3 to 10% of children. This case highlights the importance of recognizing and managing these vascular lesions, especially for general pediatricians who play a crucial role in early identification and referral. We present the case of a male neonate with a hemangioma on the abdomen, initially observed as a precursor lesion 48 hours after birth. The initial approach was to monitor for signs of spontaneous regression. With signs of progression and nodularity at two months, oral propranolol was initiated, showcasing the evolving landscape of treatment options. Close follow-up revealed a positive response to treatment, with decreased size and improved appearance. Propranolol's success lies in reducing blood flow to the hemangioma, promoting regression. If necessary, this case underscores the multidisciplinary approach needed for optimal management involving pediatricians, dermatologists, and other specialists. Parent education on hemangiomas, treatment options, and possible side effects is crucial. With decreasing gestational age and lower birth weights, infantile hemangiomas become more common, emphasizing the need for early recognition and referral. The critical hemangioma growth period in the first few months indicates the importance of early intervention for better outcomes. The presented case contributes to our understanding of IHs, emphasizing the role of general pediatricians in ensuring timely referrals and tailored collaborative care.

BACKGROUND

Infantile hemangiomas (IHs) are bright red vascular papules, plaques, or nodules seen in neonates. These birthmarks are more common in females, Caucasians, infants of multiple gestations, preterm infants, and low birth weight infants.[1] IHs are characterized by abnormal growth of blood vessels and can occur anywhere in the body. There are three types of hemangiomas: superficial, deep, and mixed. They typically are cutaneous (superficial) but can also appear in subcutaneous tissues (deep) or both cutaneous and subcutaneous tissues (mixed).[2]

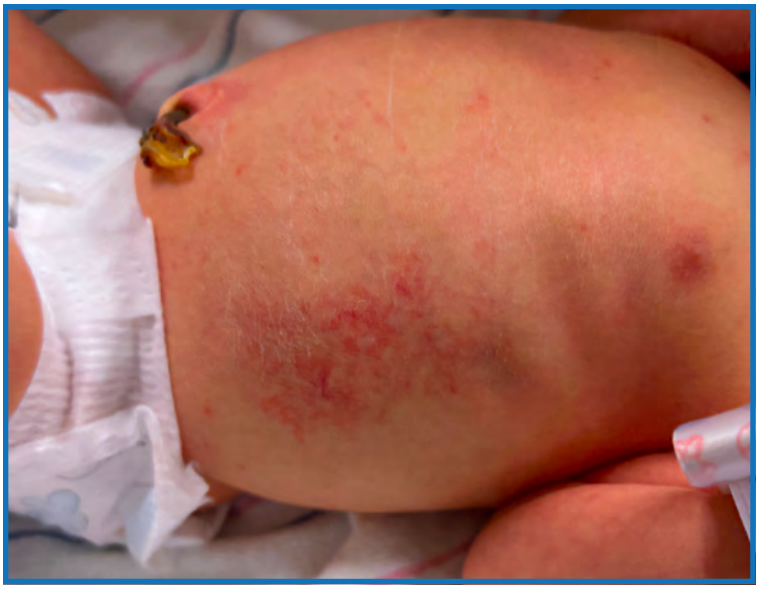

Figure 1: Clinical presentation showing the precursor lesion at three days of age.

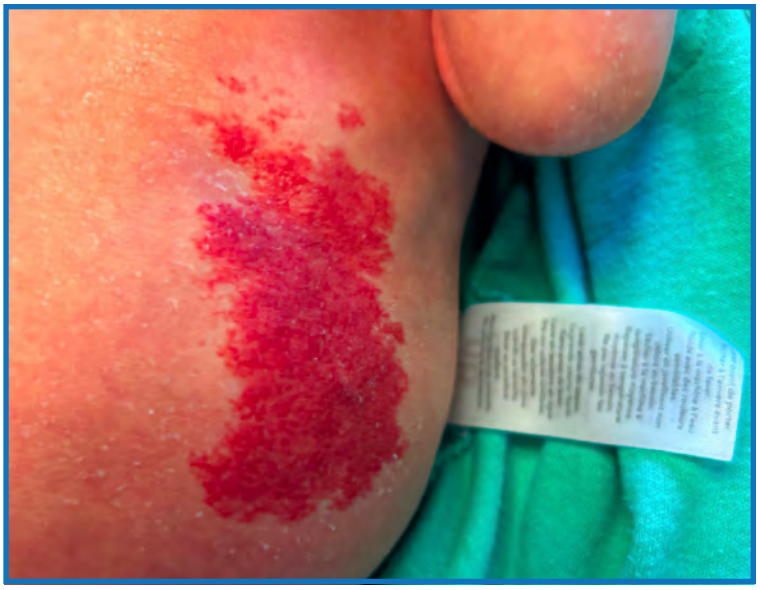

Figure 2: Photograph showing a 3 cm by 6 cm vascular patch at age 10 days.

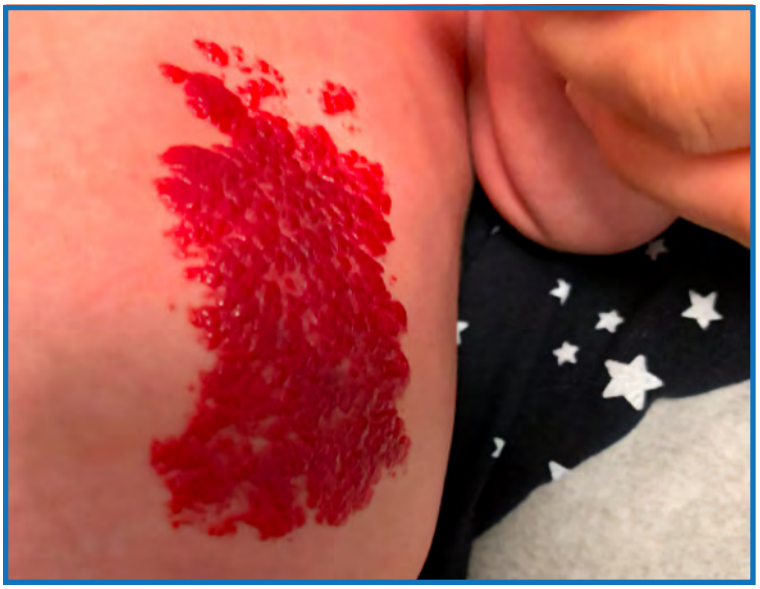

Figure 3: Clinical presentation of patient's lesion at age one month.

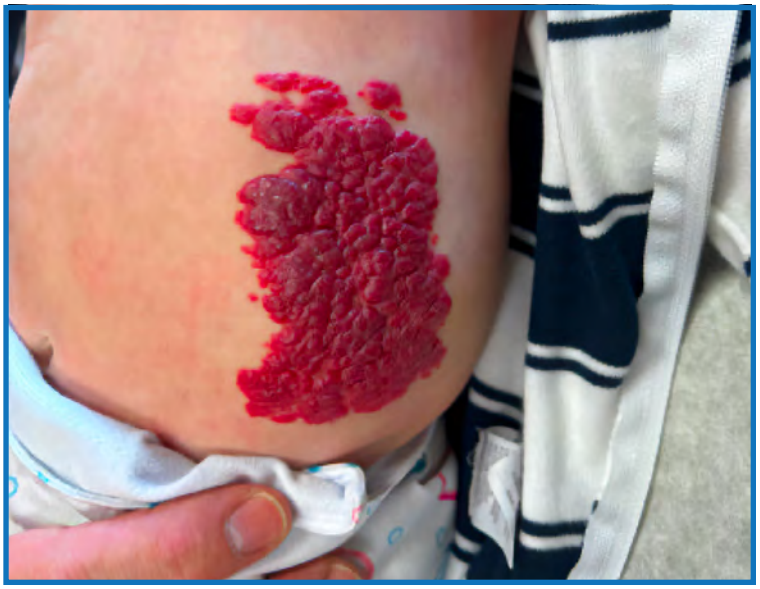

Figure 4: Photograph depicting 8 cm by 5 cm vascular patch with nodularity at age two months.

IHs are the most common benign tumors of infancy, occurring in 3 to 10% of children.[1] They typically emerge a few weeks after birth, with most presenting by age five months.[3] There are often precursor lesions, which can be pale areas of vasoconstriction, erythematous or telangiectatic macules, or blue patches.[4] The growth and resolution of hemangiomas occur in three phases: proliferation, plateau, and involution. The proliferation phase involves rapid growth, typically during the first six months to one year of life, when lesions can become redder and more raised. After proliferation, the rate of growth declines. This plateau phase can last months to years. The involution phase entails a gradual size reduction, usually around one year. Hemangiomas may take years to regress fully, and the size and location of the lesion can influence resolution. Variation of these phases is common, and not all IHs follow the same timeline. While hemangioma growth has traditionally been thought of in distinct stages, different parts may be simultaneously in different stages.[3]

Most IHs regress on their own without scarring or other issues; however, some may cause complications, depending on location or size. Lesions that interfere with vision or breathing are particularly concerning.[5] Other complications include ulceration, infection, and permanent disfigurement.[5] Most hemangiomas do not require treatment, but there are multiple treatment options (topical beta blockers, oral beta blockers, prednisone, laser, and surgery) in cases of disfigurement, complications, or functional impairment.[5,6] One-fourth of hemangiomas are treated medically.[5] We present a case of a hemangioma on the abdomen that was treated with oral propranolol.

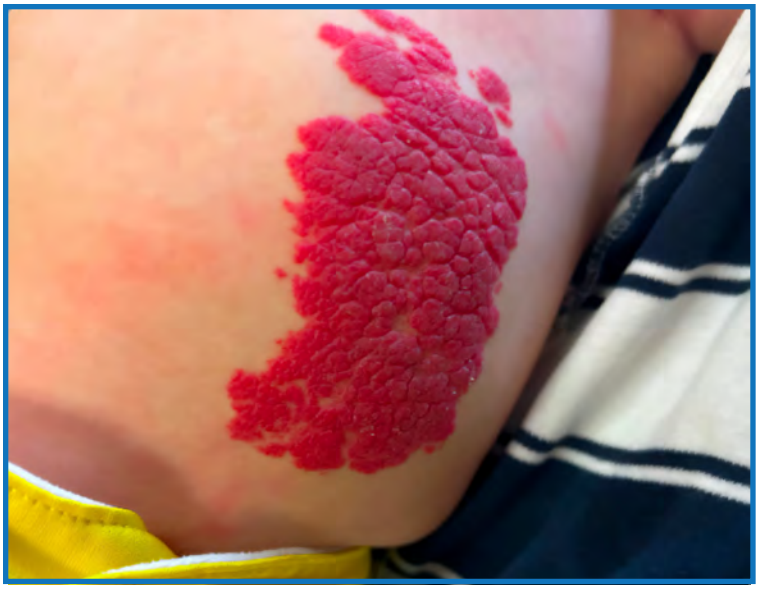

Figure 5: Clinical presentation of lesion at age four months.

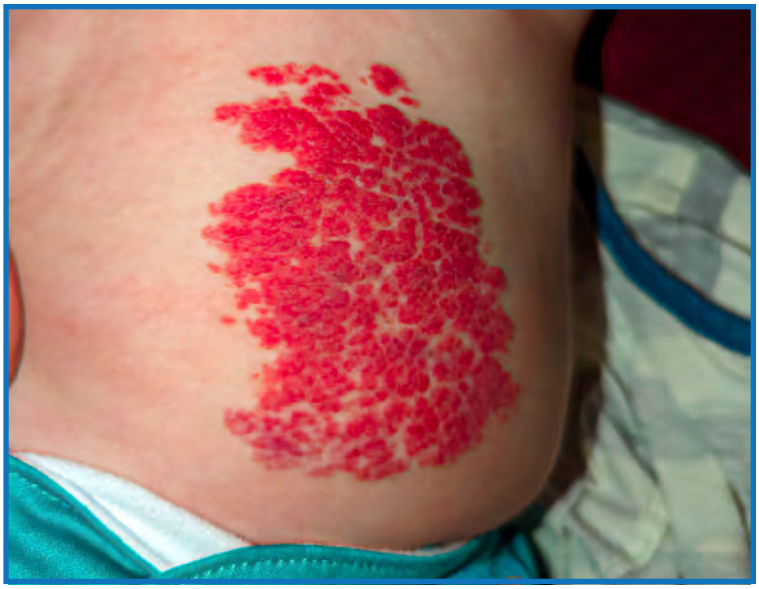

Figure 6: Photograph of lesion at age five months.

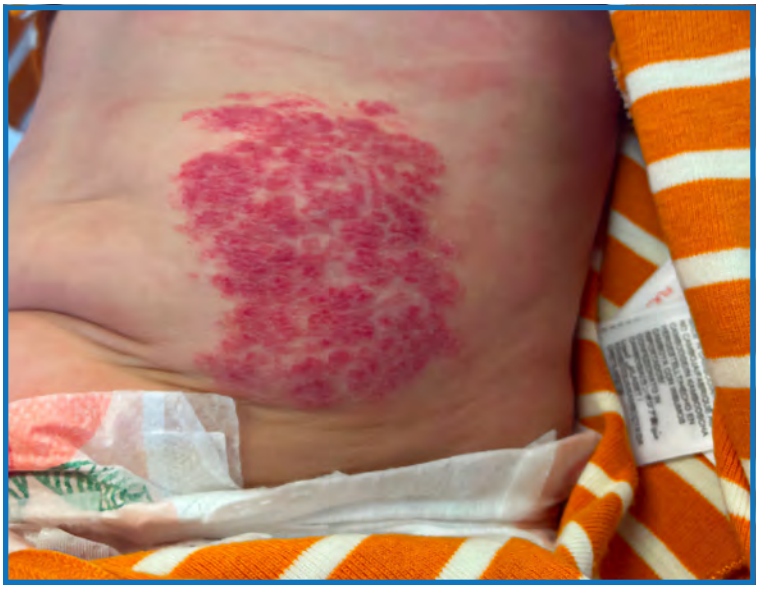

Figure 7: Photograph of the lesion at age eight months.

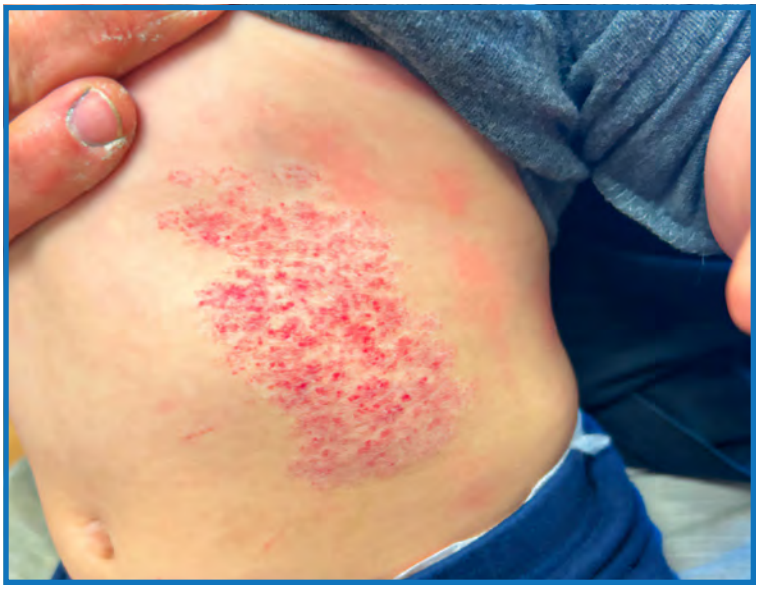

Figure 8: Photograph depicting improvement in patient's lesion at age twelve months, after ten months of propranolol treatment.

PRIMARY OBJECTIVE

To explain the case of a patient with infantile hemangioma, explore the treatment options available for IHs, and examine the importance of early referrals by general pediatricians for this condition.

SUBJECT PRESENTATION

A male neonate, one of twins, was delivered at 38 weeks gestation via emergency cesarean-section due to failure to progress after a pregnancy complicated by pre-eclampsia. Birthweight was 2.56 kg (5 lb 10.3 oz). In the newborn nursery 48 hours after birth, a lesion was noted on his left abdomen, suspected to be a hemangioma precursor lesion with nevoid telangiectasia in the differential diagnosis. Figure 1 shows the precursor lesion at age 3 days. The parents were advised to apply petroleum jelly to the lesion and scheduled an outpatient dermatology follow-up.

A pediatric dermatologist evaluated the neonate at 10 days of age. The mother reported increased erythema and slight lesion enlargement (Figure 2). The physical examination revealed a 3 cm by 6 cm vascular patch on the left abdomen with no evidence of bleeding, ulceration, or infection. Dermoscopy confirmed vascularity; no other vascular lesions or birthmarks were found on a full-body skin examination. Given the predominantly patch-stage vascular lesion and the infant's age, the decision was made to observe the hemangioma.

Follow-up dermatology appointments occurred every two months. The hemangioma progressed over the next two months, becoming larger, more raised, and palpable (Figures 3 and 4), measuring 8 cm by 5 cm as a vascular patch on the left abdomen with new nodularity within the lesion without signs of ulceration. Oral propranolol therapy was initiated at a dosage of 2 mg/kg divided twice daily.

At the age of four months (after two months of propranolol therapy), the vascular plaque measured 8 cm by 5 cm and was less raised, indicating decrease in the proliferative activity since the previous visit (Figure 5).

During visits at age five and eight months, the plaque remained 8 cm by 5 cm but showed continuing visual improvement with some areas of clearing compared to prior photographs as (Figure 6 and Figure 7).

Throughout the treatment, the parents denied side effects from propranolol. The patient's hemangioma continued to decrease in size on the dose of 2 mg/kg per day of propranolol divided twice daily. Figure 8 shows the lesion at age 12 months, after being on propranolol for ten months.

DISCUSSION

IHs are common vascular tumors in neonates, often presenting as bright red patches or nodules. This case underscores the importance of recognizing and managing IHs, particularly for general pediatricians who play a crucial role in the early identification and referral of affected infants.

In our case, the decision to observe the hemangioma at age 10 days aligns with the typical approach since many hemangiomas undergo spontaneous regression without complications. Given the size of the hemangioma and the potential for proliferation, close observation was made at regular follow-up. At two months, with signs of progression and nodularity, propranolol treatment was initiated, highlighting the importance of medical intervention in specific cases.

The mechanism behind the success of propranolol lies in its ability to reduce blood flow to the hemangioma, promoting regression. Hemangeol® (propranolol hydrochloride oral solution) is approved by the U.S. Food and Drug Administration to treat IHs in children starting at age five weeks. While propranolol is generally safe, parents and physicians should be aware of possible side effects that may occur during treatment, such as signs of hypoglycemia, sleep disturbance, hypotension, bradycardia, bronchospasm/wheezing, and gastrointestinal upset.[5] The risk of side effects increases with increasing dosage.[5] While topical propranolol decreases the risk of side effects, it may be less effective than oral propranolol.[7] The target dose for oral propranolol is 2 to 3 mg/kg/day in two or three divided doses.[8] In cases where propranolol is ineffective or does not resolve the lesion completely, laser, prednisone, other beta-blockers (atenolol, nadolol), or surgery can be employed.

This case also emphasizes the multidisciplinary approach needed for optimal management. General pediatricians should be able to classify an IH as high risk, with those IHs necessitating referral to pediatric dermatologists. IHs can be classified as high risk if there is the potential for life-threatening complications or functional impairment (such as those involving the airway or located near the eyes), have a risk of ulceration (eg, in the perineal or perianal area), those associated with structural anomalies (eg, PHACE syndrome or LUMBAR syndrome), or those that have the potential for permanent disfigurement.[9] Pediatric dermatologists can assess the need for intervention and collaborate with specialists, such as surgeons or ophthalmologists, as necessary. Parent education on hemangiomas, particularly on the timeline of hemangiomas, treatment options, and possible side effects, is essential.

IHs may become more common due to increased births with lower gestational age and lower birth weights[1], making it even more important that pediatricians are familiar with these lesions. There is a critical period of growth in the first few months of hemangioma appearance, indicating the need for early referral to specialists if warranted. Most of the IH growth takes place before the age of five months. Chang et al. found that the average age of the initial visit to a specialist was also five months.[3] If treatment is needed, lesions treated earlier during the proliferation phase result in better outcomes.[1] Young infants, particularly those with large or potentially threatening lesions, should be followed closely.[3] Hopefully, long-term complications will decrease with earlier recognition of IHs and more prompt dermatologist referrals.[1]

Although most IHs are cutaneous, they can occur in other organs, most commonly the liver.[10] The presence of multiple cutaneous IHs has been associated with hepatic hemangiomas.[10,11] Infants younger than six months old with five or more cutaneous IHs should be screened for hepatic hemangiomas with a hepatic ultrasound.[11] Most hepatic hemangiomas do not require treatment, but complications, such as hepatomegaly, cardiac failure, and hypothyroidism, can arise in rare cases.[10,11] In our case, a liver ultrasound was contemplated due to the considerable size of the IH. However, it was ultimately not pursued since only one lesion was present.

This case provides insights into the clinical course and management of infantile hemangiomas. It underscores the role of general pediatricians in early identification, timely referrals, and collaborative care to ensure the best outcomes for infants with IHs.

REFERENCES

1. Anderson KR, Schoch JJ, Lohse CM, et al. Increasing incidence of infantile hemangiomas (IH) over the past 35 years: Correlation with decreasing gestational age at birth and birth weight. *J Am Acad Dermatol*. 2016;74(1):120-126.
2. Drolet BA, Esterly NB, Frieden IJ. Hemangiomas in children. *N Engl J Med*. 1999;341(3):173-181.
3. Chang LC, Haggstrom AN, Drolet BA, et al. Growth characteristics of infantile hemangiomas: implications for management. *Pediatrics*. 2008;122(2):360-367.
4. Chamli A, Aggarwal P, Jamil RT, Litaiem N. Hemangioma. In: StatPearls, NCBI Bookshelf version. StatPearls Publishing; 2023. Accessed February 11, 2024. https://www.ncbi.nlm.nih.gov/books/NBK538232/
5. Martin K, Blei F, Chamlin SL, et al. Propranolol treatment of infantile hemangiomas: anticipatory guidance for parents and caretakers *Pediatr Dermatol*. 2013;30(1):155-159.
6. Schiestl C, Neuhaus K, Zoller S, et al. Efficacy and safety of propranolol as first-line treatment for infantile hemangiomas. *Eur J Pediatr.* 2011;170(4):493–501.
7. Price A, Rai S, Mcleod RWJ, et al. Topical propranolol for infantile haemangiomas: a systematic review. *J Eur Acad Dermatol Venereol*. 2018;32(12):2083-2089.
8. Sans V, de la Roque ED, Berge J, et al. Propranolol for severe infantile hemangiomas: follow-up report. *Pediatrics*. 2009;124(3):e423-e431.
9. Krowchuk DP, Frieden IJ, Mancini AJ, et al. Clinical Practice Guideline for the Management of Infantile Hemangiomas. *Pediatrics*. 2019;143(1):e20183475.
10. Gnarra M, Behr G, Kitajewski A, et al. History of the infantile hepatic hemangioma: From imaging to generating a differential diagnosis. *World J Clin Pediatr*. 2016;5(3):273-280.
11. Horii KA, Drolet BA, Frieden IJ, et al. Prospective study of the frequency of hepatic hemangiomas in infants with multiple cutaneous infantile hemangiomas. *Pediatr Dermatol*. 2011;28(3):245-253.