

Vascular lesions, malformations, anomalies, tumors, and hemangiomas: what they are, what to do, when to worry, when to refer

What is a Vascular Anomaly?

Scott A. Norton, MD, MPH

Propranolol for uncomplicated infantile hemangiomas

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Congenital vascular syndromes: diagnostic role of a multidisciplinary clinic

Kalyani Marathe, MD, MPH

Complex vascular anomalies: therapeutic role of a multidisciplinary clinic

Nancy Bauman, MD (Otolaryngology)

Lasers to treat vascular lesions

Iris Rubin, MD

What is a Vascular Anomaly?

Scott A. Norton, MD, MPH

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What exactly is a Vascular Anomaly?

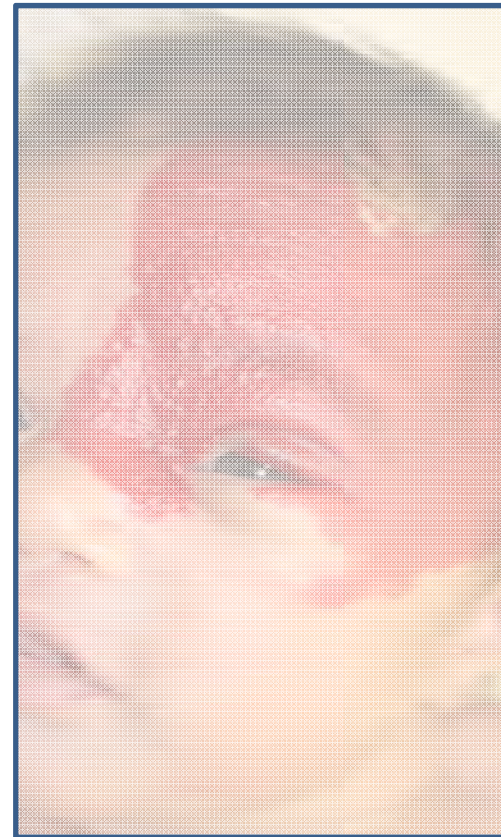
What's the difference between a vascular malformation and a vascular tumor?

And why does this matter so much?

No financial conflicts of interest.

What is a Vascular Anomaly?

Malformation vs Tumor
(Port-wine stain vs Hemangioma)

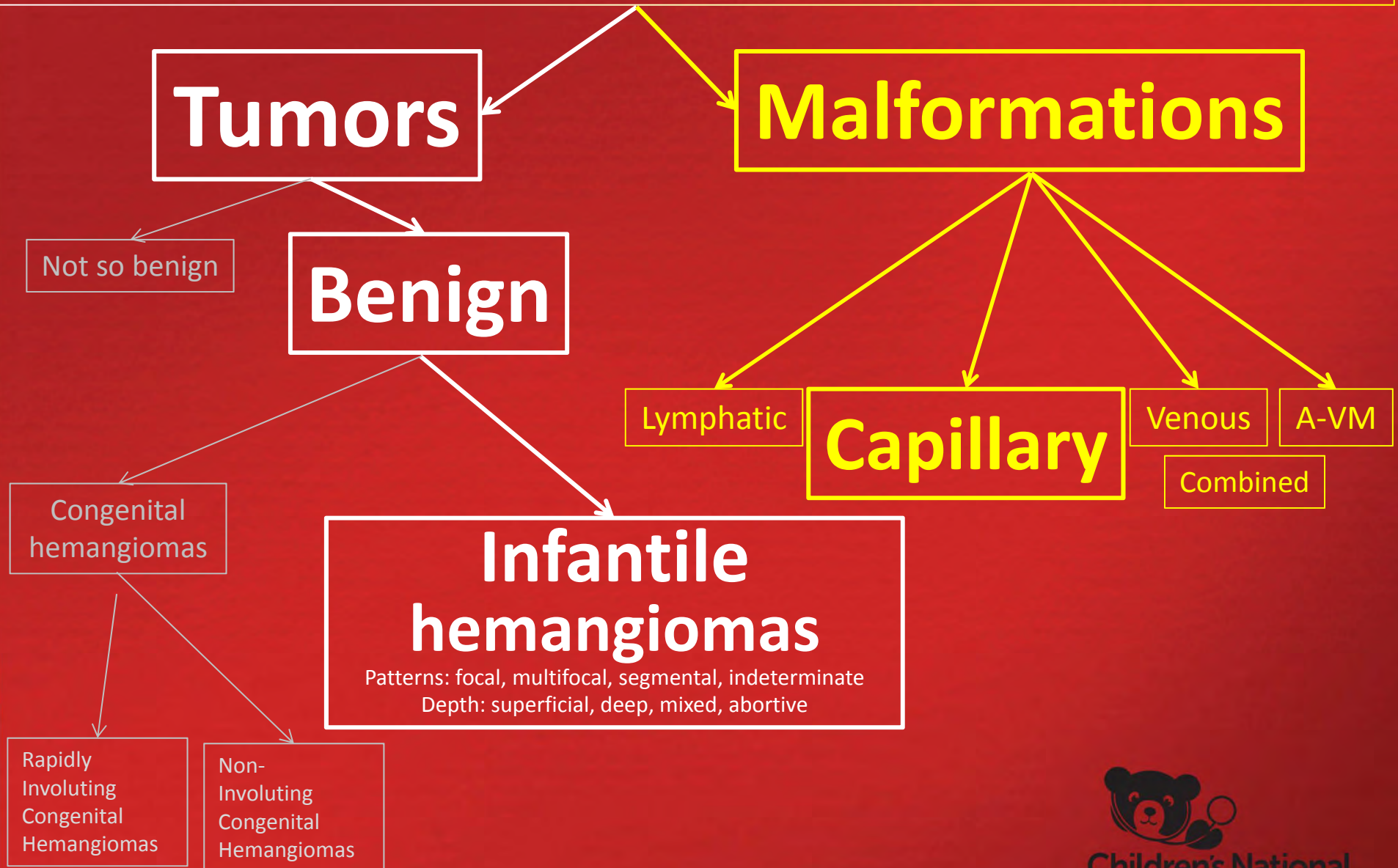


Syndromic vs Non-syndromic
Treatable vs Not treatable

Differences: Tumors (hemangiomas) vs malformations

Why does it matter so much?

Congenital Vascular Anomalies



International Society for the Study of Vascular Anomalies (ISSVA) Classification

| Vascular anomalies | | | | |
|---|--|--|-----------------------------|---------------------------------|
| Vascular tumors | Vascular malformations | | | |
| | Simple | Combined ° | of major named vessels | associated with other anomalies |
| Benign Locally aggressive or borderline Malignant | Capillary malformations Lymphatic malformations Venous malformations Arteriovenous malformations* Arteriovenous fistula* | CVM, CLM LVM, CLVM CAVM* CLAVM* others | See details | See list |

Congenital Vascular Anomalies



International Society for the Study of Vascular Anomalies (ISSVA) Classification

| |
|--|
| Benign vascular tumors |
| Infantile hemangioma / Hemangioma of infancy |
| Congenital hemangioma |
| Rapidly involuting (RICH) * |
| Non-involuting (NICH) |
| Pyogenic granuloma (aka lobular capillary hemangioma) |
| Others |
| Locally aggressive or Malignant vascular tumors |
| Kaposiform hemangioendothelioma |
| Angiosarcoma |
| Epithelioid hemangioendothelioma |
| Others |

Infantile Hemangiomas (ISSVA Classification)

| Pattern | Different types |
|--|--|
| <ul style="list-style-type: none">- focal- multifocal- segmental- indeterminate | <ul style="list-style-type: none">- superficial- deep- mixed (superficial + deep)- reticular / abortive / minimal growth- others |

| Association with other lesions | |
|--|---|
| PHACE association / syndrome | Posterior fossa malformations, Hemangioma, Arterial anomalies, Cardiovascular anomalies, Eye anomalies, sternal clefting and/or supraumbilical raphe |
| LUMBAR (SACRAL, PELVIS) association / syndrome | Lower body hemangioma, Urogenital anomalies, Ulceration, Myelopathy, Bony deformities, Anorectal malformations, Arterial anomalies, and Renal anomalies |

Potential Complications of Infantile Hemangiomas

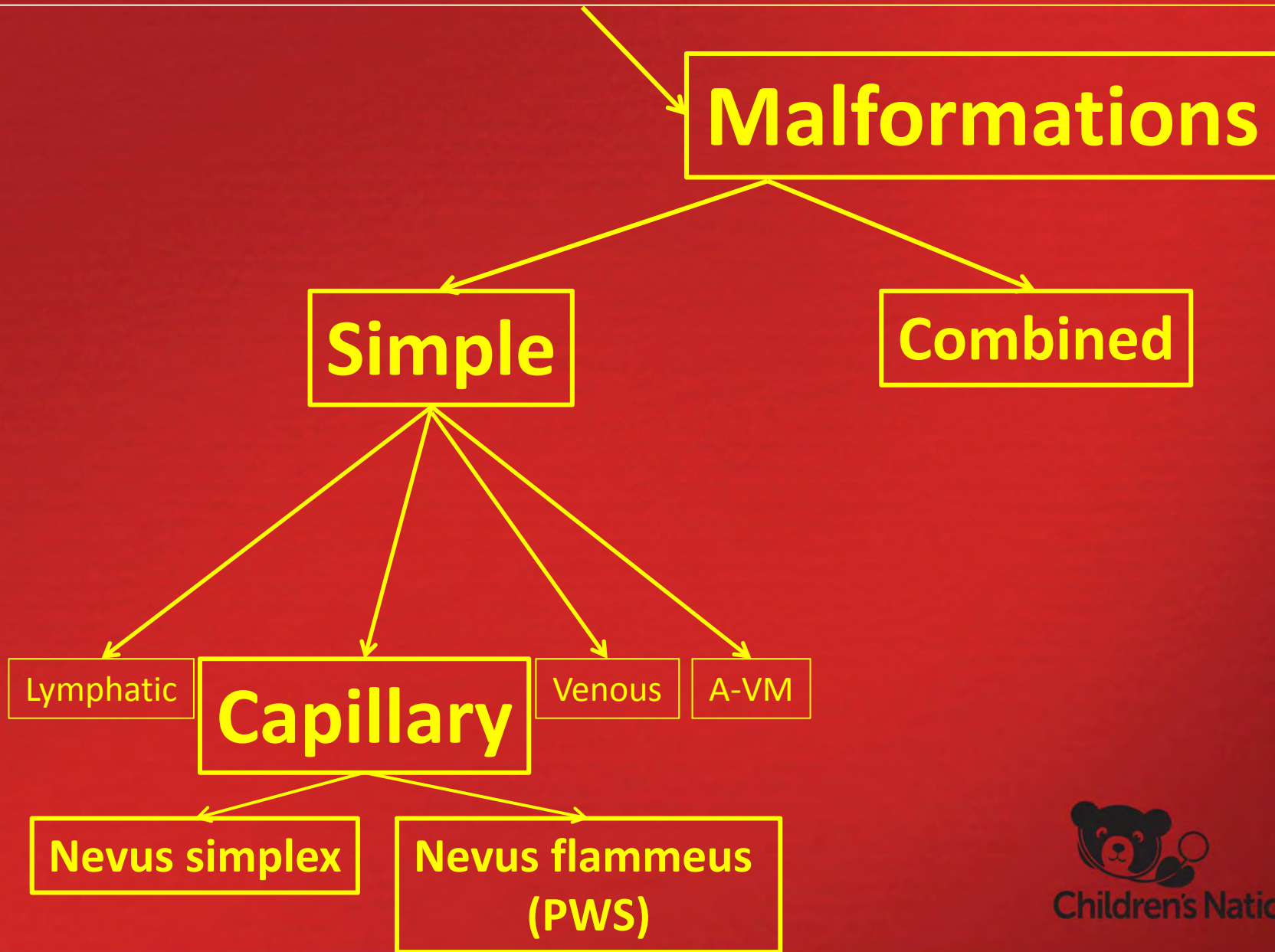
- Ulcers
- Disfigurement
- Cervicofacial (“beard”) hemangiomas → can be a marker for subglottic and upper airway IH
- Orbital IH → visual impairment, amblyopia
- Airway obstruction
- Association with underlying syndromes
 - Typically with segmental IH

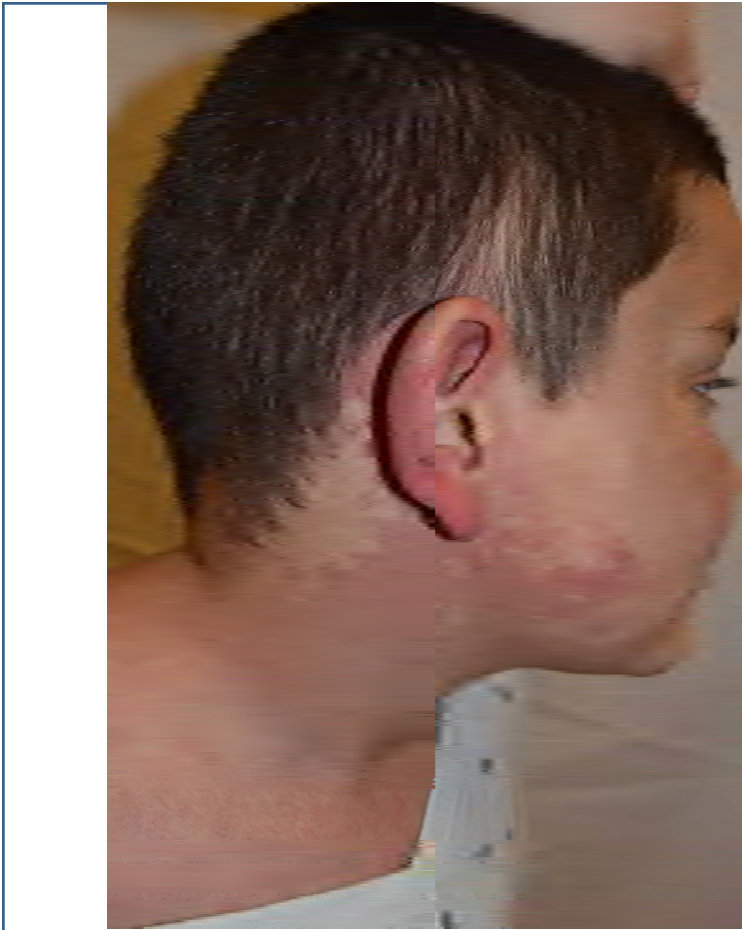


Hemangiomas



Congenital Vascular Anomalies





Malformations



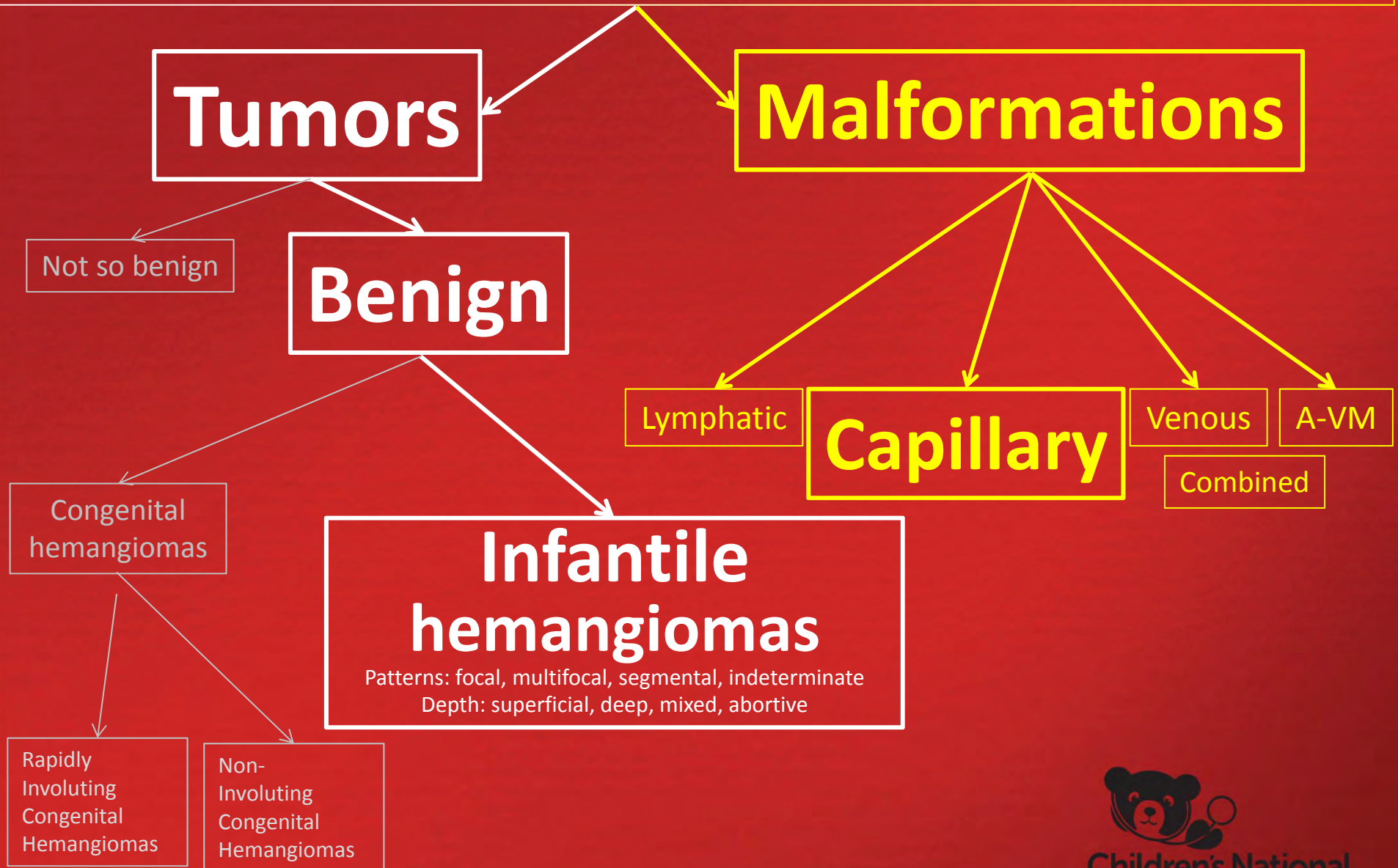
Capillary malformations and genetic correlates

| Capillary malformations (CM) | |
|---|--------|
| Cutaneous and/or mucosal CM (aka "port-wine" stain) | GNAQ |
| CM with bone and/or soft tissue hyperplasia | |
| CM with CNS and/or ocular anomalies (Sturge-Weber syndrome) | GNAQ |
| CM of CM-AVM | RASA1 |
| Telangiectasia | |
| Hereditary hemorrhagic telangiectasia (HHT) | |
| HHT1 | ENG |
| HHT2 | ACVRL1 |
| HHT3 | |
| JPHT (juvenile polyposis hemorrhagic telangiectasia) | SMAD4 |
| Others | |
| Cutis marmorata telangiectatica congenita (CMTC) | |
| Nevus simplex / Salmon patch | |
| Others | |

Other vascular malformations & genetic correlates

| Vascular malformations associated with other anomalies | |
|--|--------|
| Klippel-Trenaunay syndrome | |
| Parkes Weber syndrome | RASA1 |
| Servelle-Martorell syndrome | |
| Sturge-Weber syndrome | GNAQ |
| Limb CM + congenital non-progressive limb overgrowth | |
| Maffucci syndrome | |
| Macrocephaly - CM (M-CM or MCAP) | PIK3CA |
| Microcephaly - CM (MICCAP) | STAMBP |
| CLOVES syndrome | PIK3CA |
| Proteus syndrome | AKT1 |
| Bannayan-Riley-Ruvalcaba syndrome | PTEN |

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TBD

Lasers for vascular lesions: which lesions and when?

Iris Rubin, MD