Pediatric Dermatology: Bumps and Lumps

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Disclosure

- I have no conflicts of interest or financial relationships to disclose.
- Some medications discussed may be used off-label.
Objectives

• Overview of common pediatric cutaneous growths.
• Identify common skin lesions on pediatric patients.
• Understand the current treatment for common pediatric growths.
• Discuss availability of new medications and treatment options.
Pre-test Question

1. Verruca Vulgaris, “common warts”, found most frequently on hands, feet and fingers are benign epidermal tumors caused by human papillomavirus, specifically HPV types:

- A. 1
- B. 6 and 11
- C. 16 and 18
- D. 2 and 4
Pre-test Question

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A. 1
B. 6 and 11
C. 16 and 18
D. 2 and 4
Differential diagnosis of lumps and bumps

- Congenital
- Vascular
- Inflammatory
- Neoplastic
- Infectious
- Malignant
Congenital

- Encephalocele
- **Dermoid cyst**
- Nasal glioma
- **Branchial cleft cyst**
- **Thyroglossal duct cyst**
- Accessory tragus
Dermoid Cyst

• Firm, non-mobile cysts
• usually noticeable at birth

• Site of closure of embryonic clefts
  • most common along the eye at the supraorbital ridge and nasal root

• contains multiple adnexal structures: hair follicles, eccrine glands, sebaceous glands, and apocrine glands.

• If a pit is present, intracranial extension is more likely
  • Don’t squeeze!

CT or MRI to r/o encephalocele or malignant tumor.
Dermoid Cyst
Bronchogenic Cyst

- Small, solitary cyst
- **Midline in sternal notch**
- Present at birth
- Abnormal budding of tracheobronchial tree
- Ddx: milia, cyst, divot, and *congenital cartilaginous rest of the neck* (wattle) that appears as a firm, exophytic, flesh-colored tag at the midline to lateral neck.

- As compared to:
  - Thyroglossal duct cyst: midline, upper neck
    - Along thyroid gland. Moves up and down with swallowing.
  - Branchial cleft cyst: lateral, upper neck.
  - Along SCM.
Accessory Tragus

- Soft or firm (depending on cartilage), flesh-colored papules
- Anterior to the normal tragus, b/l 6% cases
- Benign
- Relatively common finding in newborns
- Syndromes associated:
  - Oculoauriculovertebral syndrome (or Goldenhar syndrome) where epibulbar dermoid cysts and vertebral defects are seen.
Accessory Tragus
Vascular

- Hemangioma of infancy
- Vascular malformation (venous, AVM, lymphatic)
- Pyogenic granuloma
- Spider Angioma
Superficial Infantile Hemangioma

- mc tumor in neonatal period

- **Proliferative stage**: Significant growth over *first few months*, bright red, finely lobulated surface

- **Involution**: starts to regress after a *year*, gray-purple, flattens, fibrofatty-atrophic

  - “30% by 3 years, 50% by 5 years, 70% by 7 years, and 90% by 9 years”

PHACES, PELVIS
Superficial Infantile Hemangioma Treatment

- **Propranolol**
  - 2 mg/kg/day divided TID
  - During growth period.
  - Long term studies show no risk of developmental adverse effects or growth impairment at age 4 in pts treated with at least 6 mos of propranolol (JAAD July 2016)
  - Not associated with psychological problems at age 7. (JAAD July 2017)
  - AE: Hypotension, bradycardia

- **Topical Timolol** 0.5% gel forming solution can work for superficial hemangiomas
  - Vasoconstrictor, VGEF

- Pulsed Dye Laser
Superficial Infantile Hemangioma
Pyogenic Granuloma

• Bright, red papule; lobular proliferation of capillaries
• Rapidly growing, friable, can ulcerate, bleed
• Usually secondary to trauma
• Mc on face and neck in peds

• Tx: shave excision and electrocautery, silver nitrate, pulsed dye laser (usually needs repeat treatment), topical timolol
  • Timolol: Initial study in March/April 2014 SPD journal using timolol 0.5% gel forming solution BID. Great results with clearance after 2-3 mos. Bleeding stopped relatively instantly.
Pyogenic Granuloma

Bologna

Hurwitz
Spider Angioma

- Small raised bright pink papule with radiating “spider-like” telangiectasias
- Blanchable
- Can occur after injury, sneezing, cough
- May resolve on own
- Laser
Spider Angioma
Inflammatory

- Granuloma annulare
- Erythema nodosum
- Vasculitis
- Acne
Granuloma Annulare

- Pink to erythematous annular, non-scaling papules that can coalesce into plaques
- Dorsal hands and feet most common
- Tx difficult: topical/intralesional steroids
- 50-70% resolve 2 years
- Ddx: tinea corporis, rheumatoid nodules
Granuloma Annulare

Hurwitz
Neoplastic

- Pilomatricoma
- Juvenile xanthogranuloma
- Langerhans cell histiocytosis
- Lipoma
- Smooth-muscle hamartoma
- Dermatofibroma
- Dermatofibrosarcoma protuberans
- Infantile digital fibroma of childhood
- Infantile myofibromatosis
- Neurofibroma
- Mastocytosis
- Angiofibroma
- Syringoma
- Eccrine poroma
- Trichoepithelioma
- Nevus sebaceus
- Keratoacanthoma
- Nevus comedonicus
- Epidermal nevus
- Melanocytic nevus
- Spitz nevus
- Keloid
- Epidermoid cyst
- Steatocystoma multiplex
- Collagenoma
- Vellus hair cysts
- Osteoma cutis
Juvenile Xanthogranuloma (JXG)

- Yellow to orange papule to nodule, on head or neck
- Early childhood, 20% present at birth, M>F
- Classified as a non Langerhaan cell histiocytosis, cells derived from dermal dendrocytes.
  - considered a reactive proliferation, but it is unclear what stimulates them.
- Can have extracutaneous findings, mc ocular, 0.4% pts, specifically the iris.
  - Children under 2 years of age with multiple lesions are more likely to have eye involvement.
  - Spontaneous hemorrhage in the anterior chamber of the eye, or hyphema, is the most common ocular presentation.
  - typically treated with intralesional or systemic corticosteroids, radiation, or surgical excision.
JXG

- Association btwn JXG and NF-1, and juvenile chronic myelogenous leukemia (JCML).
- **Spontaneously resolves** in several months to 6 years
- Residual pigmentary alteration and atrophy.
- Treatment is reserved for systemic disease and symptomatic lesions.
  - Corticosteroids, radiation, and surgical excision.
Pilomatricoma

- Rock-hard, calcified nodule with blueish hue, non-painful
- Face (mc), head and neck
- F>M
- Derived from the hair matrix
- Multiple lesions have been associated with myotonic dystrophy (Steinert disease), Gardner syndrome, Rubinstein–Taybi syndrome, and trisomy 9.
- Two useful diagnostic signs are the “tent sign” and “teeter-totter sign”
- Ddx: dermoid cyst, epidermoid cyst
- Larger and cosmetically unacceptable lesions should be surgically excised, as they are unlikely to regress spontaneously.
Pilomatricoma
Trichoepithelioma

- Smooth-topped, firm, flesh to slightly tan colored papule
- Nasolabial folds (mc), upper lip, central forehead
- Multiple lesions are inherited dominantly, AD; Brooke Spiegler.
- Benign tumors, or possible hamartomas, derived from the pilosebaceous unit.
- The genetic defect has been mapped to chromosome 9p21.
- A solitary trichoepithelioma can be removed by simple excision.
- Treatment: shave removal, dermabrasion, electrodessication, and curettage.
Trichoepithelioma
Nevus Sebaceous of Jadasson

- Well circumscribed, orange to tan plaque on head or face
- Usually present at birth
- **PTCH** gene mutation
- Surgical excision has been recommended traditionally out of concern for development of secondary neoplasms:
  - Most common secondary benign neoplasm is **SPAP**; 1/3 pts
  - Most common secondary malignant neoplasm is **BCC**
  - Most of them are probably **trichoblastomas**
- Multiple nevi sebaceous may occur in association with **Schimmelpenning syndrome:**
  - Nevus sebaceous occurs with cerebral, ocular and skeletal defects.
Nevus Sebaceous of Jadasson

Hurwitz
Solitary Mastocytoma

- Erythematous to tan colored papule or plaque, can blister
- Birth, first few months of life
- **Benign**, collection of mast cells
- “Darier sign”
  - Urticarial when rubbed
- Resolves spontaneously
- **Urticaria Pigmentosa**
  - Multiple brown macules and plaques
Solitary Mastocytoma

Hurwitz
Dermatofibroma

- Small, well-defined reddish-brown dermal nodule
- Extremities mc; can be anywhere
- Benign neoplasm of fibrous connective tissue
- Occasionally seen in children
- Etiology unknown; usually secondary to insect bite or folliculitis
- “Dimple sign”
- No treatment necessary
  - Can be excised
Dermatofibroma
Epidermal Nevus

- Linear, warty hyperpigmented plaque
- At birth, infancy
- Benign, hyperplasia of epidermal keratinocytes
- Commonly on extremities; Blaschkoid distribution
- ILVEN (inflammatory linear verrucous epidermal nevus)
- Superficial destructive therapies lead to high recurrence rate
- Tx: Retinoids, 5-FU, steroids, surgical excision are effective for smaller, localize lesions, Cryotherapy, dermabrasion, electrodesiccation, CO2 laser ablation

Epidermal Nevus Syndromes: nevi associated with seizures, MR, skeletal and ocular defects.
  - Schimmelpenning Syndrome, Nevus Comedonicus Syndrome, Pigmented hairy cell nevus syndrome, Proteus syndrome, CHILD.
Epidermal Nevus

Hurwitz

Danderm.dk
Infantile Digital Fibroma

- Firm, dome shaped nodule on dorsum of fingers and toes
- < 1yo, M = F
- Spontaneous regression 2-3 yrs
- Observe, if large can resect → high recurrence rate
Infantile Digital Fibroma
Vellus Hair Cysts

- multiple, 1–2 mm diameter, follicular papules
- axillae, neck, chest, abdomen, and arm flexures
- asymptomatic lesions
- resolve over months to years without treatment
- familial cases with AD inheritance have been described
- topical retinoids may hasten the resolution, but can be irritating.
Vellus Hair Cysts

Bologna
Steatocystoma

- Single or multiple firm, round, cystic nodules
- Chest, arms and face
- **KRT17 gene**
- **Tx:**
  - excision for simple cysts
  - Isotretinoin can shrink existing nodules and can temporarily prevent new lesions.
Steatocystoma
Syringoma

- Small, flesh to yellow colored papules
- **Eyelids** are most common, neck, torso, extremities, genitalia
- Single or multiple
- Benign tumors of **eccrine** glands
- Present at puberty
- Tx: cryosurgery, dessication, CO2 laser
Syringoma

Cohen

Hurwitz
Angiofibroma

- red, firm, blanchable papules
- Usually solitary
- If multiple lesions on the face may be associated with:
  - Tuberous Sclerosis: scalp, cheeks, nlfs
  - MEN-1
- appear in early childhood
Angiofibroma
Neurofibroma

- Soft, flesh-colored, compressible papule
- "Buttonhole" sign
- Benign, neural origin
- Sporadic in healthy individuals
- Multiple plexiform type neurofibromas associated with:
  - Neurofibromatosis type 1
Neurofibroma
Infectious

• Wart
• Molluscum Contagiosum
• Nodular Scabies
• Insect Bite
• Cat Scratch Disease
• Deep Fungal Infection
• Orf
• Papular Urticaria
Warts

- Verrucous papules; mc fingers, hands and feet
- Benign, caused by HPV
- Incubation period: 1-3 months to years.
- Trauma promotes the virus. Resolve within 3-5 years.
- HPV 1 – plantar, **HPV 2 and 4 – common**, HPV 3 – plana, HPV 6 and 11- condyloma accuminata
- Tx: Salicylic acid, lactic acid, liquid nitrogen, electrocautery and CO2 laser surgery.
- “**Ring phenomenon**”: secondary to cantharidin 0.7%, and even liquid nitrogen.
Stubborn warts...

- Contact sensitizers: **Squaric acid**, rhus extract, diphenylcyclopropenone, topical retinoids.
  - Squaric acid dibutyl ester (SADBE): apply 2% in office q3wks and 0.2% TIW at home (JAAD May 2000)

- Intralesional **Candida** antigen: Injected into 1-2 of the molluscum every 3 wks; typically 3-5 treatments
  - Bleomycin.

- Topical **Imiquimod** (MWF qhs x 8wks)

- **Podophyllotoxin**

- **Cantharidin** compound product: cantharidin 1%, salicylic acid 30%, and Podophyllotoxin 5%

- **Cimetidine** 25-40mg/kg/day

- **PDL**- attack the vessels
Stubborn warts...

- **WartPeel**, pharmacy in Iowa; **Salicylic acid + 5FU**, applied at bedtime under “sticky tape”

- **Zinc sulfate** 10 mg/kg/day (max 600 mg) x 2 mos  
  - nausea is really bad

- **Propolis** daily x 3 mos  
  - avoid if bee allergy

- **Valtrex** 1 gm daily x 60 days  
  - just 2 cases (JDD Feb 2016)

- **Picato**- couple case reports - genital warts and epidermodysplasia verruciformis

- **HPV vaccine**- some case reports show warts go away after vaccination.
Warts
Molluscum Contagiosum

- Poxvirus
- Affects 15-20% children
- Spreads via direct contact
- Several months - 4 years, mean duration 12 months
- Incr incidence AD with incr MC lesions
- MC Dermatitis 39%
  - Topical steroids
- Inflamed MC lesion 22% / Furuncle-like
  - BOTE sign
- Gianotti Crosti like Id Reaction
  - extremities
Molluscum Contagiosum

- **Treatment:**
  - **Cantharidin**
    - No pain, wash off in 4 hours, intraepithelial blister
  - **Light Cryotherapy**
    - Spray for about 6 seconds, some pain, possible residual pigmentary alteration
  - **Curettage**
    - Minimally painful, rapid clearance, have band aids available!
    - Can pretreat with EMLA or liposomal lidocaine
<table>
<thead>
<tr>
<th><strong>EMLA</strong></th>
<th>Eutectic mixture of local anesthetics: 2.5% lidocaine/2.5% prilocaine</th>
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<tr>
<td></td>
<td>• Apply under occlusion 60-120 minutes prior to procedure</td>
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<td></td>
<td>• shorter for mucosal, genital skin, diseased skin</td>
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<td>• Maximum recommended dose</td>
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<td>• 10g with 1-2g/cm2</td>
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<td>• Obtain maximum depth of 5mm of analgesia</td>
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<td>• Can cause some local irritation</td>
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<td>• Patch formulation</td>
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<td>• Caution: Methemoglobinemia (prilocaine)</td>
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<td><strong>MC</strong></td>
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<td>• <strong>Liposomal lidocaine</strong> 4% or 5%</td>
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<td>• Over the counter</td>
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<td>• 30 minutes before procedure +/- occlusion</td>
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<td>• Longer duration of analgesia vs EMLA</td>
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<tr>
<td>• Does not contain prilocaine</td>
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Molluscum Contagiosum
Scabies

- 1-2 mm red papules, can be excoriated, crusted, or scaling, burrows.
- Peds: bullae and pustules, esp palms and soles.
- Infestation by mite Sarcoptes scabiei var. hominis
- Permethrin 5% cream
  - apply neck down tonight, wash off in am. Repeat in 1 wk
  - ALL family members have to do it simultaneously
  - Safe for any age and in pregnant women
- Ivermectin 0.2 mg/kg
  - Take one dose today and another dose in 1 wk
- Precipitated Sulfur- 10% in white petrolatum at compounding pharm
  - Apply bid for 3 days; strong odor (Winter Clinical Jan 2016)
- Wash all towels, clothes, sheets in hot water, anything that can’t be washed should be placed in a closed plastic garbage bag and tied closed for 72 hrs
Scabies

Bologna
<table>
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<th>Malignant</th>
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<tr>
<td>- Rhabdomyosarcoma</td>
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<tr>
<td>- Neuroblastoma</td>
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<tr>
<td>- Leukemia cutis/lymphoma</td>
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<tr>
<td>- Melanoma</td>
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<tr>
<td>- Basal cell carcinoma</td>
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<tr>
<td>- Squamous cell carcinoma</td>
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Basal Cell Carcinoma (BCC)

- non-healing, pearly, reddish-gray to brown papule or plaque with a central dell or crust and peripheral telangiectasias
- occurs primarily in middle age and elderly
- increasing in frequency in adolescents and young adults, particularly in fair-skinned individuals in sunny climates.
- risk linked to **UV light exposure**, most lesions appear on sun-exposed sites; face, ears, neck, and upper trunk.
  - Tanning beds
- Tx: electrodesiccation and curettage or simple excision.
BCC

• When BCC is diagnosed in sun-protected areas or in children, the practitioner must search for predisposing factors, such as:
  • radiation, arsenic exposure, a pre-existing nevus sebaceus or scar, or a hereditary condition such as Xeroderma Pigmentosum and Basal Cell Nevus syndrome.

• Lesions tend to enlarge and develop into progressive BCCs.

• Early diagnosis and removal of enlarging BCCs reduces the need for more extensive and disfiguring surgery.
BCC

Hurwitz
Rhabdomyosarcoma

- Uncommonly presents in the skin but can metastasize to the skin from its primary muscle origin.
- **Rapidly growing, painful.**
- Vary from small nodules to large vascular-appearing tumors.
- Head and neck most common.
- Early recognition and treatment are essential for cure.
- Tx: Pediatric oncologist for further workup and treatment.
Rhabdomyosarcoma
Neuroblastoma

• Metastatic to the skin in about 1/3 of patients.
• Primary site in most cases is retroperitoneum.
• Lesions are reddish-blue, firm, asymptomatic nodules.
• When rubbed, the lesions will show a characteristic blanching with an erythematous rim due to release of catecholamines, typically lasting over 30 min.
• Another important clue is periorbital bruising or “raccoon eyes” that is seen with ocular metastasis.
• Tx: Pediatric oncologist for further workup and treatment.
Neuroblastoma
1. A 3 year old male presents to clinic with his mother complaining of a growth on his neck for a "while", maybe since he is a year old. The "bump" does not itch or cause any pain and has not changed in size or color. Upon exam, the lesion appears to be an orange-yellow papule on the right lateral neck. What do you advise your patient and his mother regarding treatment for this lesion?

- A. recommend biopsy for further evaluation
- B. observation since it will most likely spontaneously resolve over next few months to years
- C. inform them the lesion requires immediate excision
- D. treat with cryotherapy and have them follow up in two weeks
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Takeaways

- Tiny bumps affect tiny humans just like rest of us.
- It's important to address all lesions on a patient with an adequate differential.
- New treatment options are constantly being discovered, staying up to date brings new options for your patients; aiding in the best treatment option for your patient.
- At the same time it's essential to know when you need help and to consult your local dermatologist.
References


