Objectives

• Review treatment approaches for childhood molluscum and warts
• Share tips for performing pediatric procedures

Molluscum self-resolves

• Treatment should not cause more morbidity than the actual disease
• Spontaneous clearing is expected in 70% by 18 months
• No treatment has been shown to hasten the resolution of the entire outbreak

Benign neglect is an option

• Educate parents
• Advise gentle skin care with emollients
• Avoid sharing towels
• Treat dermatitis if present

Benign neglect is an option

“the natural resolution of molluscum contagiosum remains a strong method for dealing with the condition”

Why treat molluscum?

- Treatment can be effective in treating individual molluscum lesions
- To attempt to limit burden of molluscum and limit spread
- To treat symptomatic molluscum
  - It is estimated 1/3 of children have symptoms or associated rashes

Molluscum dermatitis

- Treat with low or medium potency topical steroid

What are signs of resolving molluscum?

- Inflamed molluscum
- Gianotti-Crosti like reaction

Choice of molluscum treatment:

- Based on safety, tolerability, efficacy
- Low risk of pain!

In office destructive methods:

- Cantharidin for younger children
- Curettage or light cryotherapy for older children

Cantharidin is good option for young kids

- Causes no pain while child in office
- Scarring is not common (intraepithelial blister)
- Not approved by US FDA (included under Bulk Substances Act for compounding to physicians
**Childhood molluscum contagiosum: Experience with cantharidin therapy in 300 patients**

- Retrospective series
- 90% lesion clearance
- 95% of patients reported positive experience and would use treatment again

**Cantharidin tips:**

- Apply with blunt end of cotton-swab
- Allow to dry x 5 min
- Wash area in 2-6 hours
- Treat only a few lesions at first visit (e.g. 5-6 lesions)
- Use cantharidin 0.7% in collodion base

**Curettage after topical anesthetic is a good option for older children**

- Topical anesthetic can include EMLA or liposomal lidocaine 4 or 5%
- Limit use based on age of patient and body surface area
- Avoid use on damaged or inflamed skin

**Do home treatments work?**

- Data for topical therapy is scanty
- Imiquimod 5% may not work
  - Cochrane review showed moderate-quality evidence that topical 5% imiquimod was no more effective than vehicle in terms of clinical cure but led to more application site reactions

**What are the risks/benefits of curettage?**

- Advantages: rapid clearance of visible lesions
- Disadvantages: can be painful, bloody, does not induce immunity, higher rate of user error

**What about cryotherapy?**

- Also can be used in older children
- Freeze with liquid nitrogen using a cotton-tipped swab or spray technique for ~6 seconds
- Repeat every 3 weeks

**Mathes E & Frieden I. Pediatric Annals 2010.**
Molluscum treatment - summary

- Educate all patients and parents
- Treat molluscum dermatitis
- Know the signs of resolving molluscum
- If pursuing treatment:
  - Consider cantharidin in younger children
  - Consider curettage or cryotherapy in older children
- Further studies are needed to assess topical therapies

Wart treatment

Warts are common

- Up to 1/3 of primary school children have warts
- No single treatment is uniformly effective
- Up to 2/3 of warts in children spontaneously resolve in 2 years
  [Mossing AM, Estonia WJ. Arch Dermatol 1963.]
- Therapy should not increase morbidity

Why treat warts?

- Many do not quickly self-resolve and may spread
- May cause physical discomfort, interference with function, or social embarrassment

What is known about evidence based treatments of warts?

- Randomized controlled trials are lacking
- Many variables influence effectiveness of treatment
- A large placebo effect is seen (20-30% response rate)
  [Sterling J. Curr Opin Pediatr 2016.]

Salicylic acid is the best treatment

- Best tested
- Should be considered as first line treatment in all patients
- Cochrane Review showed significantly increased chance of clearance of warts at all sites treated with salicylic acid
  [Kwek et al. Cochrane Database of Systematic Reviews 2012.]
**Salicylic acid tips**

- Very important to soak and PARE DOWN wart prior to application
- Cover with patch to maintain contact
- Avoid on facial warts
- Compliance rate often poor

**What about cantharidin?**

- Cantharidin 0.7% can lead to ring warts and is NOT recommended
- Cantharidin combination product (cantharidin 1%, salicylic acid 30%, and podophyllotoxin 5%) has been used successfully in plantar warts

**Clear duct tape doesn’t work**

- In ‘02, Focht et al. showed duct tape was significantly more effective than cryotherapy in a study of 60 children (85% vs 60% clearance rates)
- Later, two blinded controlled studies showed no benefit of clear duct tape monotherapy over placebo

**What about cryotherapy?**

- Cochrane Review showed less evidence for cryotherapy efficacy compared to salicylic acid
- Pooled analysis:
  - Cure rates for cryotherapy from individual studies ranged from 0% to 69% (mean cure rate of 49%)
  - Cure rates for combination cryotherapy and salicylic acid ranged from 38-78% (mean cure rate of 58%)

**What is best method for cryotherapy?**

- Efficacy using cotton wool bud is equal to cryo-spray method
- More aggressive freezing (e.g. 10 sec) is better than gentler freezing (but greater risk of pain and blistering)
What if warts are not responding?

- Consider immunotherapy!
- Topical immunotherapy with contact sensitizer such as squaric acid has been associated with wart clearance rates of 69% and 84%


What about injected immunotherapies?

- A series of 47 children treated with intralesional candida or mumps antigen showed a 47% cure rate after an average of 3.7 treatments. 14/47 children also showed resolution of distant warts
- Use ice packs prior to injection to minimize pain


So what’s the deal with cimetidine?

- Sometimes used off-label as an adjunctive treatment for warts (given its immunomodulatory properties)
- Open label studies have reported benefit at 25-40 mg/kg/day
- Other randomized controlled trials failed to show benefit

What about zinc??

- Oral zinc sulfate may be beneficial for recalcitrant warts (at least in zinc deficient patients)
- RCT of 80 children & adults treated with oral zinc sulfate vs placebo
  - Given at 10 mg/kg (up to max of 600 mg/day)
  - Showed 86% wart cure rate compared to 0% in placebo group
- Of note, all patients were zinc deficient
- Large drop-out rate


What about zinc??

- In another study of 55 children and adults, 78% treated with zinc had cured in 2 months compared to 13% of placebo


Can I use laser?

- Case series of PDL for recalcitrant warts in adults and children showed clearance of 63% and 89% (Kopera et al and Schellhaas et al.)
- Pretreatment with salicylic acid may make PDL more effective

What about treating flat warts or facial warts?

- Consider gentle cryotherapy
- Consider imiquimod 5% cream and/or tretinoin 0.05% cream (both off-label)

Summary - wart treatment:

- Use salicylic acid in all patients!
- Soak and file/pare lesions between applications
- Cryotherapy can be used

Summary - wart treatment:

- For recalcitrant warts, use simple destructive methods in more aggressive manner before moving to second line therapies
- For multiple lesions, immunotherapy can be considered
- Individualizing treatment is key

Summary - future directions

- Determine whether HPV vaccine may help prevent common warts (through cross-protective mechanism)
- Larger RCT of second line wart therapies are needed

Tips for performing basic pediatric procedures

- Sit at or below level of child
- Let patient touch your “cool flashlight” (dermatoscope)
- Demonstrate on parent
- Examine extremities first
- Allow fearful children to stay in parent’s lap
What about procedures?

- Explain the procedure in simple language
- Avoid using words such as “needle,” “shot,” and “prick”
- Include the child in the conversation
- Don’t lie

Language is important!

<table>
<thead>
<tr>
<th>Language to avoid</th>
<th>Language to use</th>
</tr>
</thead>
<tbody>
<tr>
<td>You will be fine; there is nothing to worry about</td>
<td>What did you do in school today?</td>
</tr>
<tr>
<td>(reassurance)</td>
<td>(distraction)</td>
</tr>
<tr>
<td>This is going to hurt: He won’t hurt</td>
<td>It might feel like a pinch</td>
</tr>
<tr>
<td>(negative feedback)</td>
<td>(sensory information)</td>
</tr>
</tbody>
</table>

Consider topical anesthetic

**EMLA**
- Use under occlusion 1 hour before procedure
- Analgesia is achieved to depth of 3 mm after 1 hour and 5 mm after 2 hours
- Only apply to small areas (follow guidelines)
- Limit use in newborns; avoid use in infants younger than 12 months who are being treated with methemoglobinemia-inducing medications

Topical anesthetics - EMLA

<table>
<thead>
<tr>
<th>Age and Body Weight Requirement</th>
<th>Maximum Total Dose of EMLA Cream, g</th>
<th>Maximum Application Area, cm²</th>
</tr>
</thead>
<tbody>
<tr>
<td>0-3 months or ≤5 kg</td>
<td>1</td>
<td>10</td>
</tr>
<tr>
<td>3-12 months and &gt;5 kg</td>
<td>2</td>
<td>20</td>
</tr>
<tr>
<td>1-6 years old and &gt;10 kg</td>
<td>10</td>
<td>100</td>
</tr>
<tr>
<td>7-12 years old and &gt;20 kg</td>
<td>20</td>
<td>200</td>
</tr>
</tbody>
</table>

Topical anesthetics

- Liposomal 4% or 5% lidocaine
  - Apply 30 minutes before procedure
  - Occlusion is not required (but may be used)
  - No risk of methemoglobinemia
Procedural approach

• Never show the patient the needle
• Prepare equipment tray outside room and cover with drape
• Start distraction technique prior to procedure
• Have parents seated for procedure

Distraction techniques

Infant Pre-school School-age Adolescent

- Blowing bubbles, tightened wind, sound, music, books
- Puppets, imitation games
- Art, drawing, colouring, play dough
- Interactive games, video games, movies, computer games, books

Non-anesthetic techniques to manage pain

<table>
<thead>
<tr>
<th>Neonate</th>
<th>Infant</th>
<th>Pre-school</th>
<th>School-age</th>
<th>Adolescent</th>
</tr>
</thead>
<tbody>
<tr>
<td>Oral/parenteral, topical, cooling</td>
<td>Physical contact and no skin contact, cooling, cold/heat, hydrocombs</td>
<td>* Touch and cold sensation, milking pressure</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

Post-procedure approach

• Praise, rewards
• Debrief

What if the patient can’t stay still?

• A “toddler wrap” can be used
• Wrap sheet around one arm and tuck underneath torso
• Then wrap sheet circumferentially around the body

References

References