SRI LANKA MEDICAL ASSOCIATION OF NORTH AMERICA EASTERN REGION INC. PRESENTS

SLMANA EAST CHARITY BALL ANNUAL GENERAL MEETING & SCIENTIFIC SESSIONS ON NOVEMBER 12TH, 2011

NEW YORK HILTON AND TOWERS
1335 Avenue of The Americas New York, NY
PRIMARY HYPERHIDROSIS

Diagnosis of Primary HH - Start in the 1st or 2nd decades of life & should be Bilaterally Symmetrical

Occurs in 2.8% of the US population

Typically affects the hands, axillae, feet & less commonly the face (facial flushing)
Primary HH is reported to be inherited as an Autosomal dominant gene, with incomplete penetrance.
PRIMARY HH

- Has Psychological, Social, Economic & Occupational implications
- Most patients present in their teens and twenties
- Majority of pts. are on Anti-Anxiolytic drugs
TYPICAL PRESENTATION

- Palmar, Axillary & plantar HH
- Palmar HH only
- Axillary HH only, with or without Bromhidrosis
- Facial HH / Gustatory sweating with or without facial flushing
- Plantar HH
DIAGNOSIS

- Primary vs Secondary HH
- Endocrine work-up – Hyperthyroidism, Hyperpituitarism, Dumping syndrome, Alcohol & drug withdrawal, menopause, Diabetes, febrile illnesses, paraplegia, stroke, anxiety etc
- Objectively quantify degree/severity of HH & the impact on ADL
- Family history
PATIENTS WITH PRIMARY HH

- Excessive sweating independent of ambient temperature, worse with anxiety!
- Excessive hand sweating leaves puddles of sweat, avoid shaking hands
- Axillary sweaters change shirts 3-4 times/day, wear only darker clothes
- Plantar sweaters cannot wear sandals or slippers, wear thick sox & closed shoes
NON-SURGICAL TREATMENTS FOR PRIMARY HH

- Antiperspirants (Aluminum Chloride – Drysol)
- Anticholinergics – (Robinul)
- Iontophoresis
- Therapies based on Bio-feedback
- Botulinum toxin “A” Injection
IONTOPHORESIS (Drionic & Fischer)

- Immersing hands or feet in tap water through which a 15-20ma direct current is passed
- Iontophoresis to deliver anticholinergics
- Recommends 20mts on days 1, 2, 4, 7, 10, 15, 22 & maintenance sessions every 4 weeks
- Side effects: burning, tingling, skin irritation, erythema
BOTULINUM TOXIN INJECTIONS

- Intra-dermal botox blocks the release of Ach

- The area to be treated is outlined using the “starch-iodine test” the area is marked out into 1.5cm squares and 2units of Botox is injected intradermally to each square (max dose 100units)

- Works best for axilla and less well in the hands and feet
MEDICAL MANAGEMENT

- **Antiperspirants** – 1st line of Rx - Palmar, Plantar, Axillary HH (Drysol - Aluminum based)
- **Iontophoresis** – non-responsive to above Palmar & Plantar
- **Anticholinergics** – Robinul (1mg tid) palmar, plantar, axillary (1st line in whole body HH & facial HH)
- **Botox Injections** – Axillary HH not responsive to 1 & 2 (not recom. In palmar – muscle wasting & hand weakness)
STARCH IODINE TEST SHOWING LOCATION OF EXCESSIVE SWEATING
SURGICAL TREATMENT OF PRIMARY HH

- Excision of Apocrine glands – Axilla (liposuction)
- Radio-frequency lesioning of the Sympathetic ganglia (Imprecise)
- Endoscopic Thoracic Sympathectomy
THORACIC SYMPATHECTOMY FOR HH

- Isolates the sympathetic supply to the sweat glands
- Immediately stops sweating, hands after sympathectomy slightly warmer & pink
- Approaches –
  - Supra-clavicular; Trans-axillary
  - Postero-lateral thoracic (midline approach)
- Endoscopic Thoracic Sympathectomy
INTERNATIONAL NOMENCLATURE FOR SYMPATHECTOMY SURGERY (ISSSS)

- Notation of level or levels where sympathetic chain isolated
- **Rib based** - R2, R3, R4, R5
- **Ganglion based** – G2 (R2-3) G3(R3-4), G4(R4-5), G5(R5-6)
- **Old terminology** – Sympathicotomy / Sympathectomy
  - T2, T3, T4, T5 Sympathectomy.
INDICATIONS FOR ENDOSCOPIC THORACIC SYMPATHECTOMY(ETS)

- Severe Palmar with Mod. Axillary, & Plantar Hyperhidrosis (failed medical Rx)
- Isolated Axillary
- Facial Flushing or Redness
- Reflex Sympathetic Dystrophy (CRPS)
- Raynaud’s Syndrome
- Idiopathic cardiac arrhythmias - children
BILATERAL ENDOSCOPIC THORACIC SYMPATHECTOMY-ETS
DIVISION OF THE TRUNK AT R3, R4 ISOLATES THE 3\textsuperscript{rd} GANGLION
CLINICAL MATERIALS & METHODS

Retrospective review of 185 patients for a total of 370 sympathectomies.

138 patients were available for follow-up

(very mobile young Pt. population)

RESULTS - 1

- ETS for HH - 182pts,
- ETS for facial Flushing - 3pts.
- Avg. time from ETS to questionnaire - 1.3yrs
- Of the 138 patients, 81 females (59%) & 57 males (41%)
- Age range 10 - 67yrs. (mean 28, SD 8.9)
RESULTS WITH ETS FOR HH

- 98% reduction of sweating in Palmar HH
- 80% Reduction in Axillary HH
- 60% Reduction in Plantar HH
- Facial Flushing / Facial sweating inconsistent response
- Recurrence 1-2% (Higher in patients treated for Axillary HH)
COMPENSATORY HYPERHIDROSIS

- Major source of dissatisfaction after ETS for HH
- Occurrence - All Pts. have some degree of compensatory HH following ETS, especially during exercise and hot weather
- However Intractable Compensatory HH, occurs in less than 5% of patients
- Incidence of the severe Intractable CHH has decreased with going to lower levels in the chain (R3,R4-3G,R4,R5-4G)
Almost all Pts. experienced some degree of CHH during exercise & hot weather (130 of 138 = 94%).

CHH occurred mostly in the back, lower chest, abdomen & thighs.

18 had one body area affected, 41 had two areas, 35 three areas & 36 had four areas affected.
SEVERITY OF COMPENSATORY HH & POSSIBLE PREDISPOSITION

- **Age** of the patient - Tendency older pts
- Pre-operative **BMI** - Tends higher with higher BMI
- **# of levels** of the sympathetic chain /ganglion divided - Tends higher with more levels

- Occurrence of Compensatory HH related to upper versus lower ganglion isolation
- Shown to reduce severe CHH (T2 to T3 & T4)
CURRENT PROTOCOL FOR SYMPATHECTOMY IN HH

- Presently all patients with Palmar HH receive a T3 Ganglion isolation (R3,R4/3G)

- Patients with Palmar & Axillary HH – T3G & T4G (R3-R4/3G, R4-R5/4G)

- Patients with facial HH & Facial Flushing – T2G (R2-R3/2G)
SATISFACTION RATES REPORTED ON THE QUESTIONNAIRE

- Very Satisfied 88 pts (64%)
- Somewhat Satisfied 36 pts (26%)
- Somewhat Unsatisfied 9 pts (7%)
- Regretted having the surgery 5 pts (3%)

Satisfaction rates highest in patients with severe palmar HH, and lowest in patients with isolated severe Axillary HH.

Results in Facial flushing & facial sweating inconsistent.

Some improvement in Plantar HH (60%)
REVERSIBILITY

Cutting or Clipping of the Sympathetic chain
Possible to remove the clips in very severe Compensatory HH to revert to original state – Inconclusive evidence of reversal

- Nerve Grafting for reversal (sural vs Intercostal nerve for grafting)-

Latif MJ, Afthinos JN, Connery CP, Perin NI, Bhora FY, Chwajol M, Todd GJ, Belsley SJ,
IRB to perform - Robotic Intercostal nerve to sympathetic trunk grafts, to reverse Intractable compensatory sweating.
CONCLUSION

Sympathectomy for intractable Palmar HH is a very effective treatment.

There was a 98% reduction of hand sweating, an 80% reduction of Axillary sweating & a 60% reduction of plantar sweating after upper Thor.ETS.

94% of patients in our series developed some degree of CHH. There was a statistically significant association between advancing age & CHH (p=0.02), Higher BMI showed a trend towards increased CHH (p=0.14).
CONCLUSION

Higher satisfaction rates were noted in Pts. treated for Palmar (100%) even with asso. CHH vs. Axillary HH(73%). Overall satisfaction rate in both groups was 92% at one year.

With sectioning of the Sympathetic trunk from T2G to T3G & T4G for palmar HH & T4G,T5G for axillary HH has significantly reduced the incidence of severe CHH
$100 for speeding and $250 for misleading the public
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