PCOS & Natural Therapies

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Overview

• Prevalence of CAM use for PCOS in Australia
• Review of the evidence for nutritional and herbal treatments for PCOS
• Discussion of treatment based on insulin resistance as well as presenting concerns

CAM use in Australian women with PCOS

• 493 women
  – PCOS support group (POSAA), social media invitations & self-referrals
• Most participants aged 25-34 years, Australian born, tertiary qualifications, employed, held private health insurance
• 304/432 (70.4% ±4.30 95% CI) used CAM in previous 12 months
CAM use in Australian women with PCOS

- 56.9% (± 4.67) used dietary supplements including vitamins, minerals & food nutrients such as fish oils, herbal supplements
- 41.9% (± 4.65) used herbal medicines including herbal tea (for therapeutic reasons), tablets and liquids.
- 14.6% (± 3.33) used vitamins and/or minerals prescribed by a medical doctor
- 47.9% (± 7.1 95% CI) reported use of > 1 type CAM product.

CAM practitioner use

- 233/304 (76.6% ± 4.76 95% CI) CAM users consulted CAM practitioner in previous 12 months
- 136/304 (44.7% ± 5.59) used more than one type of CAM practitioner
- 118 (38.8% ± 5.48) consulted naturopath
- 103 (33.9% ± 5.32) consulted chiropractor
- 88 (28.9% ± 5.1) consulted acupuncturist
- 79 (25.1% ± 4.87) consulted massage therapist
- 41 (13.5% ± 3.84) consulted osteopath
- 36 (11.8% ± 3.63) consulted reflexologist, aromatherapist, iridologist
- 34 (11.2% ± 3.55) consulted homeopath
- 27 (8.9% ± 3.2) consulted medical doctor for integrative medicine
- 20 (6.6% ± 2.79) consulted kinesiologist
- 14 (4.6% ± 2.35) consulted medical doctor for acupuncture

Naturopathic management of PCOS
As per clinical guidelines:

- Treatment aimed at addressing insulin resistance
- Modest 5-10% weight loss reduces insulin resistance dramatically and improves metabolic and reproductive features of PCOS.
- Diet more effective than exercise alone
  - Reduced carbohydrates, moderate protein & EFAs
- Exercise enhances weight loss, independently improves insulin sensitivity & menstrual regularity.
  - Regular exercise (1 hour/day) prevents weight regain following weight loss.

Treatment aims influenced by woman’s presenting concerns

- Insulin resistance and metabolic features
  - Diet, exercise, Cinnamon, Chromium, omega-3 Fatty acids
  - Alpha lipoic acid, magnesium
- Hyperandrogenic features - hirsutism and acne
  - Hirsutism: anti-androgen herbs, zinc
  - Acne: zinc and Vitamin A, Chromium
- Anovulation and (in)fertility issues
  - Inositol, Peony & Licorice, Black Cohosh

Nutritional & herbal treatments to address insulin resistance
Cinnamon
cinamomum cassia

- Insulin sensitizing effects – mechanism not completely understood
- Research on treating insulin resistance in Type 2 diabetes
  - Paucity of research specifically on PCOS
- Very small pilot study (n=15) showed significant reduction in fasting glucose, as well as in insulin resistance 1g/day (Wang 2007)
- Improved cycle regularity with 1.5g/day over 6 months (n=45)
  - No change in insulin resistance or androgens (Kort 2014)
- Dose: 2-4 g (1/2-1 teaspoon) – ensure species

Chromium - An Overview

- Forms part of glucose tolerance factor (GTF) – promotes efficient insulin function
- Improves insulin sensitivity at insulin receptor level
- Chromium picolinate most efficacious form of chromium
  - 200 to 1000 ug
- Dietary chromium is poorly absorbed.

Chromium picolinate

- 1000 ug (n=100) improved insulin resistance, fasting insulin levels, body weight; induced ovulation & regular menstrual cycles in PCOS patients (Ashoush 2016)
- 200 ug decreased fasting blood sugar and insulin levels, and increased insulin sensitivity in clomiphene-citrate resistant PCOS patients (n=92) over 3 months
  - Comparable effects to 1500mg daily of metformin but decreased hyperandrogenism with metformin (Amooee 2013)
- Higher pregnancy rate compared to placebo with 200ug over 8 weeks: 16.7 % (5/30) vs. 3.3 % (1/30)
  - Also prevalence of acne decreased and reduced hirsutism (Jamilian 2015)
Omega-3 fatty acids

- Promising evidence emerging that may improve insulin sensitivity in PCOS patients.
  - No significant effects on weight, BMI, waist circumference
- Some limited evidence may be useful for hirsutism
- Suggested mechanisms:
  - On insulin sensitivity-modifying the levels of glucose transporters (GLUT1 and GLUT4) in muscle and adipose tissue and suppression of both the activity and the expression of glucose-6-phosphatase.
  - Anti-inflammatory action of omega 3FAs and theory of inflammation and increased pro-inflammatory cytokines in PCOS

Infertility & oligomenorrhoea

Treatment - infertility & amenorrhoea/oligomenorrhoea

Improve ovulation and fertility.

- 5-10% loss of body weight- diet & exercise
- *Paeonia lactiflora* Peony & *Glycyrrhiza glabra* Licorice
  - Reduces T and improves E2:T ratio after 4 weeks
  - Proposed mechanism: promotes aromatase activity in ovary → greater rate of E2 from T, improved pregnancy rates
- Licorice 1:1 30 ml, Peony 1:2 70 ml
  - Dose 5 ml BD
Inositol

- A polyalcohol existing as 9 different stereoisomers, 2 shown to be insulin mediators: myo-inositol (MI) and D-chiro-inositol (DCI)
  - MI may be superior (Faccinetti 2015)
- Insulin sensitizing
- Second messengers of insulin.
  - (MI is converted to an inositolphosphoglycan (IPG) insulin second messenger (MI-IPG) involved in cellular glucose uptake, whereas DCI is converted to an IPG insulin second messenger (DCI-IPG) involved in glycogen synthesis)

Inositol Summary

- 70 studies- 6 RCT, 300 PCOS patients
- Dose 2-4 g
- Improves several of the hormonal disturbances of PCOS, (level I evidence)
- Improves insulin sensitivity of target tissues, resulting in a positive effect on the reproductive axis
  - (restores ovulation and improves oocyte quality) and hormonal functions
- Reduces clinical and biochemical hyperandrogenism and dyslipidaemia through the reduction of insulin plasma levels. (Dinicola 2014)
**Inositol**

- Combined Myo-inositol plus D-chiro-inositol improved oocyte & embryo quality, & pregnancy rates. (Colazingari 2013)
- 2 g myo-inositol BD improved oocyte and embryo quality in euglycaemic PCOS patients. (Unfer 2011)
- Restoration of spontaneous ovulation in amenorrhoeic PCOS patients. (Ventrella 2012)
- Combined MYO & D-chiro-inositol improved lipid profiles and reduced CV risk. (Minozzi 2013)
- Both myo-inositol (Mi-PG) and D-chiro inositol (DCI-PG) significantly improved regularity of the menstrual cycle, the acne Score, the endocrine and metabolic parameters and the insulin-resistant, n 137 young, overweight, PCOS patients over 6 months (Formusco 2015)

**Dosage and safety of Inositol**

- Dose in research 2 g/day up to 2 g BD
- Often used Italian product Inofolic™(2 g myo-inositol, folic acid 200 µg).
- Appears safe in humans.
- Only highest dose (12 g/day) induced mild gastrointestinal side effects - nausea, flatus and diarrhoea.

**Vitamin D linked with infertility**

- In PCOS patients, Vitamin D and Calcium with Metformin → higher rate of follicle formation compared with metformin alone.
- Lower success rate of IVF with Vitamin D deficiency.
Treatment - infertility & amenorrhoea/oligomenorrhoea

- Vitex agnus-castus - often used as part of herbal management of amenorrhoea and oligomenorrhoea - not indicated in PCOS as worsens cycle regularity

Cimicifuga racemosa
Ovulation induction in PCOS

- Infertile women with PCOS <35 years, were randomized to either group I (clomiphene citrate; CC) (n= 98) or group II (CC plus Cimicifuga racemosa; CR) (n=96).
- CR plus CC group had significantly higher clinical pregnancies per cycle (33/192 (17.2%) versus 71/204 (34.8%), p<0.01), compared to the CC only group.
- Authors (inaccurately) attribute the action of Cimicifuga racemosa to phytoestrogens and suggest they may be useful as part of ovulation induction for PCOS. (Shahin 2014)

Management of hyperandrogenic symptoms
Hirsutism - Serenoa repens

- 3/12 topical Serenoa extract in lotion & shampoo base in 34 men and 28 women (18-48 years) - 35% increase in hair density and 67% increase in sebum reduction assessed by sebometry, pHmetry, hydration studies & phototrichogram. (study presented at the fourth intercontinental meeting of hair research societies, June 17-19, 2004)

- 2 yr trial vs finasteride suggests improvement in androgenic alopecia in men. (Rossi A et al 2012)

Spearmint tea

*Mentha spicata*

- Cup of M. Spicata BD 5/7 during follicular phase significantly decreases free T & increases in LH, FSH & E2 in 21 females with hirsutism (12 PCOS, 9 idiopathic).
  - No significant decreases in total T or DHEAS levels.
- Significant decrease in free & total T & increased LH & FSH with spearmint tea (herbal tea bags with a standardized content of dried leaves BD drink two cups over 30 day RCT of 42 women with PCOS
  - Significant reduction in subjective assessments of hirsutism but no significant reduction in objective Ferriman-Galwey scale (Grant P, 2010)

Acne

- Seems to respond better to traditional herbal "alternatives" and nutritional treatment rather than anti-androgen naturopathic.
- Low GI/GL diet.
  - Chromium picolinate
- Zinc 30 mg (picolinate or citrate).
  - Antibacterial, anti-inflammatory actions and may decrease sebum production (Brandt 2013)
- Vitamin A 10,000-20,000 IU (avoid if trying to conceive).
- Topical tea tree acne facial wash
Conclusions

- Primary focus on diet and exercise to improve metabolic and reproductive features
- Insulin sensitizing agents
  - Evidence increasing for chromium picolinate and Cinnamon
    - ¾-1 teaspoon may be useful dietary intervention
- Licorice and Peony combination often employed by herbalists
- Greatest amount of research on Inositol
- Spearmint tea- harmless intervention for possible hirsutism management

References

References