Polycystic Ovarian Syndrome (PCOS) is a metabolic disorder involving complex issues in various organ systems such as the pancreas, adrenals, and thyroid. It is characterised by long menstrual cycles, amenorrhea, obesity, hyperinsulinemia, abnormal lipid profiles, infertility and ovarian cysts (Venes 2001). Women suffering from PCOS are at a high risk of developing cardiovascular disease, hypertension, diabetes and endometriosis. PCOS presents as an imbalance of the hypothalamic- pituitary- adrenal axis (HPA) and as such can not be regarded as merely a gynaecological disorder but instead as an endocrine disorder. A study in Melbourne in 2005 found that as many as 12 per cent of women suffers from PCOS. This amounts to about one in eight women – or 500,000 Australian women of child-bearing age (POSAA 2008).

Causes

Research has studied PCOS extensively but it has not been able to discover a clear cause. However, recent studies have revealed that disturbed insulin response to blood glucose is a key factor (Hywood et al 2004). Other factors include estrogen dominance, elevated androgens and disordered sympathetic nervous system control of the ovaries. Some studies suggest a genetic component as 40% of PCOS sufferers have a family history of the disease (Bulloch 2004).

- Insulin resistance occurs in about 30- 40% of obese women with PCOS. Severe insulin resistance can result in what is called the HAIR-AR syndrome. HA- hyper androgenism, IR- insulin resistance and AR acanthosis nigricans. Acanthosis nigricans is a condition where thickened pigmented velvety lesions develop on the vulva, nape of the neck, inner thigh and below the breasts. Excessive insulin levels in the system cause the ovaries to over-react by producing more testosterone. This triggers a surge of other conditions such as excessive hair growth, hair loss from the scalp and acne (POSAA 2008).
- High androgen levels in the ovary inhibit FSH. This interrupts the development and maturation of the ovarian follicles. It is thought that high androgen levels are caused by the over production of an enzyme responsible for forming androgens and as a result an over production of androgen in the ovaries and the adrenals. Androgen is produced using DHEA-S. This substance is elevated in 50% of women with PCOS (Bulloch 2004). The excess DHEA is converted into androgen. Some of the symptoms of elevated androgen are acne and abnormal hair growth (Hywood et al 2004).
- Estrogen dominance develops when the hypothalamic-pituitary-adrenal (HPA) axis is out of balance. The increased secretion of the Gonadotrophin Releasing Hormone (GnRH) significantly contributes to PCOS. This excessive release of GnRH causes elevated levels of Luteinising Hormone (LH) in comparison to Follicle Stimulating Hormone (FSH) at a ratio by 2:1. These abnormal LH levels create a negative feedback loop which increases the already high estrogen levels.
- There are some postulations that Xenoestrogens, found in manufactured materials, are implicated. Xenoestrogens interrupt the reproductive process by mimicking estrogenic messages to the various organ systems involved. Some products which contain Xenoestrogens are sunscreens, pesticides, weedicides, colourings, preservatives and plastics (Wikipedia).

Manifestations

Symptoms vary from client to client as some clients are not insulin resistant or obese. Some women have no menstrual cycle while others have protracted cycles with scanty to heavy bleeding.

Common manifestations include: (Bulloch 2004)

- Irregular menstrual cycles producing:
  - Amenorrhea;
  - Infertility or reduced fertility;
  - Irregular, excessive or heavy bleeding;
  - There may be a history of ovarian cysts; and/or
  - Family history of menstrual irregularities.
- Skin problems producing:
  - Acne – severe adolescent acne and continued acne into adulthood; and/or
  - Excessive hair on face, body, upper lip, chin, neck and abdomen.
- Insulin resistance producing:
  - Weight gain;
  - Difficulty losing weight;

- Family history of diabetes; and/or
- Obesity.

Complications can develop in unmanaged cases including diabetes, lipid irregularities, cardiovascular disease and endometrial carcinoma (Hywood et al 2004).

Management

Treatment is usually dependent upon what symptoms the patient is seeking to manage or resolve. This may range from help getting rid of excess hair to fertility issues to irregular menstruation.

- Irregular menstruation is usually treated with a combined oral contraceptive pill. This treatment is contraindicated in conditions of obesity as the hormones in the pill exacerbate insulin resistance.
- Hirsutism is usually treated by administering antiandrogenic drugs such as spironolactone (Wikipedia).
- Infertility is treated using drugs such as clomiferine citrate which induces ovulation. The drawback with this therapy is that it may increase the risk of multiple pregnancies (Hywood et al 2004).
- Insulin resistance is treated with metformin, a hypoglycaemic drug. Metformin is effective in reducing insulin levels, blood pressure and cholesterol levels. Its side effects include nausea, vomiting and other gastrointestinal problems. This treatment cannot compare with a good diet and an increase in exercise as this natural activity will reduce insulin and blood pressure levels (Bulloch 2004).

Naturopathic treatment would include the following:

- Treat insulin resistance and normalise blood sugar balance

Insulin resistance has a high correlation to a diet high in refined carbohydrates. So in spite of sufficient insulin levels blood glucose levels remain high. This is helped by eating a diet rich in dietary fibre, protein and reduced saturated fats. Adjusting the diet is not only helpful for the female endocrine system but is also protective against cardiovascular risk factors.

- Re-establish normal menstrual cycles by normalising ovulation and reducing androgens. If a client is on the pill it is important to discontinue its use immediately because the pill is adding hormones to their already imbalanced bio-system . The use of both symptothermal charts and barrier method contraception will help track the progress of the recovery (Bulloch 2004).
- Reduce the risk of cardiovascular disease and insulin dependence by using the above methods and introducing supplemental nutrients and herbs into the protocol.
- Exercise will not only assist with weight loss but will aid in the recovery of endocrinal control of nervous tension. Treatment involves consistent exercise at least 30 minutes daily accompanied by a weight loss program using foods low on the glycaemic index (Balch 2006).

Key nutrients (Osiecki 2008)

- Chromium is a component of Glucose Tolerance Factor (GTF) which

works closely with insulin to encourage the uptake of glucose by the cells. This is a vital supplement for people who have impaired glucose tolerance.

- Coenzyme Q10 acts as a lipid antioxidant reducing LDL levels in the blood stream. This is of vital importance in the case where blood LDL levels are elevated.
- Magnesium improves insulin sensitivity. It also plays a role in normalising menstruation.
- Omega 3 fatty acids help control blood triglyceride levels.
- Silica is important for connective tissue integrity and plays a vital role in preventing cardiovascular disease.
- Vitamin B complex which is especially rich in vitamin B6. B vitamins are vital to a healthy nervous system. B6 is especially important for the production of hormones.
- Vitamin E regulates the synthesis of sex hormones and stabilises normal growth and fertility.
- Zinc is involved in the activation of over 200 enzymes in the body. It is a necessary nutrient for normal sexual development.

Herbal recommendations

The following are the primary herbs indicated for polycystic ovarian syndrome:

- White peony (Paeonia lactiflora) is an adaptogen that works on the hypothalamic-pituitary-ovarian axis. It has been shown to up regulate progesterone, decrease raised androgen levels and it operates to modulate prolactin and estrogen. It can be used in conditions associated with relative estrogen excess, relative estrogen deficiency or relative progesterone deficiency (Trickey R 2008). The dose is 30- 60ml per week of the liquid extract.
- Gymnema (Gymnema sylvestre) is an anti diabetic herb that works as a hypoglycaemic with lipid lowering properties. It has a trophorestorative action on the pancreas modulating insulin production and insulin release. Gymnema has also been found to reduce the absorption of glucose from the intestine (Hywood et al 2004). Gymnema helps to reduce carbohydrate cravings and it improves compliance to dietary changes. The dosage is 30 -75ml of plant extract daily. (Mills et al 2006).
- Tribulus (Tribulus terrestris) is a gonadotropic adaptogen and an estrogen and androgen modulator. It has also been shown to improve protein synthesis increasing energy levels. The dosage for tribulus is 300 -400mg per day (Mills et al 2006).
- Chaste tree (Vitex agnus-castus) has been shown to reduce the production of prolactin. It acts as an adaptogen to the Hypothalamic-pituitary-ovarian axis and this influences the timing and frequency of ovulation. Vitex also has anti androgen properties and improves dopaminergic activities which inhibit prolactin production. Vitex is used to normalise shortened luteal phases, correct the luteal phase progesterone deficiencies and this reduces PMS symptoms. The recommended dosage for chaste tree is 1- 2.5 ml liquid extract daily (Mills et al 2006).
- Liquorice (Glycyrrhiza glabra) works well with Paeonia to decrease

prostaglandin levels in women with PCOS. Studies have shown that the combination of liquorice and Paeonia synergistically improves fertility. Liquorice also helps to reduce body fat without changing the body mass index. The therapeutic dose of Glycyrrhiza is 1-5 ml daily (Mills et al 2006).

Conclusion

The treatment of polycystic ovarian syndrome must take into consideration the multiplicity of organs systems that are involved in order to be effective. PCOS involves the endocrine system as well as the reproductive system and even flows into the cardiovascular and digestive system. Successful results may be obtained from several months of treatment to improve insulin utilisation, hormone modulation and the normalisation of over systems. Long term treatment will be required for sustained effects. Although polycystic ovarian syndrome does not have a clearly known cause at this time it is not an untreatable disorder. With the help of diet, exercise and herbal preparations a woman can expect to live a normal life, gain control over her blood glucose levels and overcome any fertility issues.

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