Testosterone Replacement Therapy (TRT)

Aim of treatment

The clinical goal of hormone replacement is to restore the hormone level to normal.

- Previously, it was not possible to achieve this aim with the available formulations of testosterone, which were often associated with sub-therapeutic, supra-physiological and inconsistent blood testosterone levels. In addition, the older intramuscular formulations often require frequent administration (every 1 to 4 weeks) and implants a minor surgical procedure
- The more modern gel formulations and the longer acting intramuscular injection of testosterone undecanoate allow dose titration to achieve physiological testosterone levels (ideally, in the mid to upper normal range)

Preparations

Testosterone gels

- 1% testosterone gel - Testogel® (50mg testosterone per 5g sachet)
- 1.62% metered pump (20.25mg/depression of hand pump)
- 2% testosterone gel - Tostran® in metered pump (10mg testosterone/depression of hand pump)
- Check blood testosterone 2 to 3 weeks after commencement with blood taken 2-4 hours after gel application. Inform patient not to apply testosterone gel over venepuncture site as this will lead to high levels as a result of skin contamination
- If testosterone is below 15 nmol/l then check patient compliance prior to checking the level. The absorption of testosterone from the gel can be variable. Once patient compliance has been confirmed and the level is <15 nmol/l then the dose needs to be increased by titrating the dose to achieve peak testosterone levels between 15 – 30nmol/l. This cannot be done easily with Testogel as, in most men, two sachets (100 mg) results in supraphysiological levels and guessing half sachet doses is difficult and inaccurate. In addition, it can lead to wastage and therefore increased costs. Under these circumstances, switching to an actuated metered pump dispenser (Testogel or Tostran) provides best results. The usual dose required to achieve normal physiological testosterone level is 40-80mg
- If the testosterone level is >30 nmol/L then, once this finding has been confirmed (plus pl. oestradiol), the dose should be reduced.

Testosterone undecanoate depot – Nebido® (testosterone 250mg/ml)

Given as slow, deep intra-muscular injection over 1 to 2 minutes. May require further dose after 6 weeks to achieve rapid steady state plasma testosterone levels. Then repeat every 10-14 weeks. The frequency of injection may need to be adjusted (8-14 weeks) depending on trough testosterone level

Contraindications

1. Prostate carcinoma (no evidence that testosterone increases the risk of prostatic disease but it may stimulate existing problems) – should be excluded before starting TRT. All men over 45 years should have a digital rectal examination (DRE) and a PSA (small rise not unusual, but consider urological referral if PSA rise >1.4 mcg/L over 3-6 months)
2. Any other sex-hormone dependent tumour (eg breast cancer or primary liver tumour)
3. Unexplained hypercalcaemia, nephrotic syndrome, untreated obstructive sleep apnoea
4. Severe benign prostatic hypertrophy

Monitoring

Following initial hospital baseline investigation and stabilisation:

- 3, 6 and 12 months, then annually (FBC, PSA, lipid profile, evaluation of previous trough testosterone at last Nebido injection. DRE if indicated)

Reviewed by Prof Jones Dec 2019