Nandrolone decanoate may be an adjuvant therapy to augment haemoglobin response today?

Sir,

We have read with great interest the article by Macdougall on how to optimize the use of recombinant human erythropoietin (r-HuEpo). We suggest that nandrolone decanoate may be another adjuvant therapy in elderly male patients on haemodialysis (HD), similar to l-carnitine. A retrospective study in HD patients concluded that the anaemia response to nandrolone decanoate is related to the age of patients and independent of sex, time on dialysis, or aetiology of chronic renal failure [2]. Moreover, recent studies have reconsidered the use of this treatment in uraemic patients [3,4]. The erythropoietic effect of nandrolone decanoate is mediated by direct stimulation of renal erythropoietin production or by increasing the sensitivity of erythroid progenitor cells in the bone marrow to the circulating erythropoietin [5]. It has been stated that androgens augment the erythropoietic action of low-doses of rHuEpo in HD patients [4]. In a group of elderly male patients on HD we have observed a good erythropoietic response to nandrolone decanoate and an increase of weight, triceps skinfold thickness, arm circumference and arm muscular circumference, as well as an increase in serum transferrin, total protein and creatinine levels [6]. The increase in weight and muscular mass in our patients treated with nandrolone decanoate was probably related to a lower testosterone production rate. In fact, many problems in older men may be related to androgen deficiency, including muscle weakness and wasting, osteopenia and increased prevalence of fractures, decreased haematopoiesis and memory loss. Nandrolone decanoate has a beneficial effect on nitrogen balance, weight gain, muscle mass and bone mineral density. This androgen has been used in wasting syndromes such as HIV-infected patients, men with cancer and patients with chronic obstructive lung disease. However, the effects on lipid profile with a decrease in HDL-cholesterol together with an increase in triglycerides, especially in diabetic patients, leads us to think of a higher risk of atherosclerosis, although the significant decrease of lipoprotein (a) may exert a beneficial effect [7]. Lipoprotein (a) has been identified as a possible independent risk factor for the high cardiovascular mortality of uraemic patients. Nandrolone decanoate administration does not induce significant increases in prostatic-specific antigen and prostatic acid phosphatase [8]. Other side effects in elderly male patients have been mainly mild and acceptable, such as injection site pain.

The use of nandrolone decanoate alone [2,3,6] or associated with low doses of rHuEpo [4] constitute an acceptable treatment for anaemia in uraemic elderly male patients plus a feeling of well-being and a better nutritional status. The option to use this treatment as an adjuvant treatment to rHuEpo should be kept open, specifically if the progressively increasing number of elderly patients starting dialysis in recent years is considered.

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**Reply**

Sir,

I agree partly with the sentiments expressed by Gascón *et al.* regarding the role of androgens as an adjuvant therapy to enhance the response to epoetin, but I feel that a note of caution is required. There is indeed now reasonable scientific evidence to suggest that androgens such as nandrolone decanoate may indeed augment the action of epoetin, partly by increasing endogenous renal erythropoietin production and partly by increasing the sensitivity of erythroid progenitor cells to circulating erythropoietin [1,2]. Indeed, this property of androgens is currently used by nephrologists in some countries where the use of epoetin is limited by economic constraints.

Nevertheless, the side effect and toxicity profile of androgens is of some concern, and their use should be restricted to special cases only. The virilization effects of androgen therapy, for example, would be unacceptable in most female patients, while in men the risk of prostatic carcinoma remains a concern. There is also a significant incidence of hepatic toxicity including cholestasis, cardiovascular complications, and priapism.

In short, I do feel that androgens may have a role in countries which cannot afford epoetin therapy for many of their patients, but in societies less constrained by economic factors there is little indication for their use except in extreme circumstances.

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