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SHORT COMMUNICATION

PLASMA TESTOSTERONE LEVELS IN MEN ATTENDING A SUB-FERTILITY CLINIC

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There have been conflicting reports on the plasma testosterone levels in men attending subfertility clinics and in relation to subfertility [1–3] De Kretser *et al.* (1972) found decreased levels, whilst Lawrence and Swyer (1974) and Walker, Grant, Scott and Sinclair (1975) failed to show any difference in plasma testosterone levels between such men and normals.

The object of the present study was to resolve this discrepancy and to investigate the usefulness of plasma testosterone measurements as a diagnostic aid in the screening of men attending a subfertility clinic.

MATERIALS AND METHODS

Two hundred and eleven samples of venous blood were obtained from 184 consecutive male patients (ages 21–48 years) attending a subfertility clinic. No selection of the patients had taken place prior to their entry into the study and none were on any drug therapy. Usually samples were taken on the patients first visit, whilst others were taken at follow-up visits.

Testosterone was measured on plasma extracts, without chromatography, using the method of Corker and Davidson (1978). Seminal analysis was carried out on a semen specimen provided after at least three days abstinence from sexual activity. Azospermia was diagnosed when two or more specimens failed to show evidence of spermatoza.

Results

The plasma testosterone levels in the 211 samples ranged from 0.24 to 10.30 ng/ml (mean 5.86) compared with the normal range of 2.51 to 10.13 ng/ml ($n = 54$ mean 5.89).

Of these 211 samples only one was above the normal range and this was only marginally elevated at 10.30 ng/ml although, interestingly, the sperm count in this patient was below normal.

Nine (4.3%) of the samples had testosterone levels below the normal range and these were from 7 men. Three of these seven men had bilateral undescended testes, one was shown to have Klinefelter's syndrome (47 XXY karyotype), whilst in the remaining three there was no demonstrable cause. The values found in these latter three patients were 1.74, 1.99 and 2.42 ng/ml respectively, which though only slightly below the normal range were in each case from men in whom the sperm count was below normal range, ($4–35 \times 10^6$/ml). Two of these men were treated subsequently with clomiphene and though testosterone levels promptly increased there was no beneficial effect upon their sperm counts.

Analysis of the results from the 184 men failed to demonstrate any relationship between testosterone levels and sperm count.

Fifteen of the men were azospermic of which two were shown to have Klinefelter's syndrome. One of these Klinefelters patients had a plasma testosterone value in the normal range and the other had levels similar to those found in females. Eleven of the remaining 13 azospermic patients had plasma testosterone levels within the normal range. Two azospermic patients had low plasma testosterone levels (2.30 and 0.63 ng/ml) and both had bilateral undescended testes.

DISCUSSION

The female partners of the men in the present study had not been investigated at the time of the study and so it is not possible to say how many of these men were primarily infertile.

The results presented above add support to the findings of Lawrence and Swyer (1974) and Walker *et al.* (1975), who failed to demonstrate a significant difference in the plasma testosterone levels between normal men and those attending a subfertility clinic.

The lack of any correlation between plasma testosterone levels and sperm count is in contrast to the finding that both LH and FSH do show significant correlation with sperm density [5]. The possibility exists however that testosterone levels may affect fertility in some other way than by direct action on sperm density or total sperm counts. It has been demonstrated that 19-hydroxyprostaglandin E levels in semen are dependent upon plasma testosterone concentration [6] and prostaglandins are known to have effects upon reproductive function.

Nevertheless, in the present study only 7 of 184 men were found to have plasma testosterone levels below the normal range. Of these one had a 47 XXY karyotype, three had undescended testes and in the other three, sub-normal sperm counts were found. Thus screening by the use of plasma testosterone assays would not have identified any abnormality that would not have been apparent with a physical examination, and a sperm count. This indicates that plasma testosterone assays are not suitable for use as a diagnostic tool in the study of male infertility.

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