Effect of Blood Sampling on Apomorphine-Induced Penile Tumescence in Erectile Impotence: A Case Report

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Apomorphine HCl (Apo) (0.5 mg sc), but not placebo, induced an erectile response (monitored with a mercury strain gauge) lasting 40 min in an impotent hyperprolactinemic patient. Serial blood sampling modified the 40 min erectile response. Prompt detumescence followed by complete or partial restoration of tumescence occurred each time blood was drawn. This observation points to the sensitivity of the Apo-erectile response to experimental procedures subjectively perceived as anxiogenic.

Key Words: anxiety, apomorphine, hyperprolactinemia, impotence

INTRODUCTION

Apomorphine (Apo), a short-acting, dopamine (DA) receptor agonist in animals and humans (Lal 1988) induces penile erections in normal subjects (Lal et al 1984; Danjou et al 1988) and in a variety of patients with erectile dysfunction (Lal et al 1987; 1989; Lal 1988; Segraves et al 1991) via a central DA mechanism (Lal et al 1989). Few data are available on the effect of Apo on impotence associated with hyperprolactinemia (Lal 1988) and little is known about the effect of experimental procedures on the erectile response to Apo. Chance observations are reported on the effect of blood sampling on the penile tumescence response to Apo in an impotent hyperprolactinemic patient.

METHODS

G.I., a 57 year old childless married male, gave a two to three year history of a gradual decline in erectile function followed by a two year history of inability to obtain a full erection or to penetrate. There was a longstanding history of marital discord. The impotence was present with his wife, other partners, fantasy, masturbation and erotic stimuli. Desire was normal. Physical examination was unremarkable aside from borderline small testes. Sperm analysis showed azoospermia. Karyotype was normal male (46 XY). Computed tomography scan showed a partial empty sella. Circulating prolactin (PRL) (49 ng/ml), LH (86 mIU/ml) and FSH (62 mIU/ml) were elevated and testosterone was at the lower level of normal (3 ng/ml). Clinical diagnosis was primary testicular failure and hyperprolactinemia, possibly related to the partial empty sella.
Fig. 1. Erectile response to apomorphine. Apo HCl (0.5 mg sc) was administered at time zero (†). Samples of blood were drawn from an arm vein through an intravenous line at 25 min, 40 min and 55 min (△) during repeat testing only (lower tracing). Scale on the left shows the penile circumference in cms. The baseline tumescence is about 8.0 cm on each recording. The time scale shows six squares = 10 min.

The erectile response to placebo (physiological saline), 0.25 mg Apo HCl, and 0.5 mg Apo HCl sc was assessed by attaching a mercury strain gauge to the shaft of the penis just below the glans and recording the response on paper strip charts using a SP-300 physiological recorder (Farrall Instruments, Nebraska). The three tests were conducted on separate days at least six days apart. Tumescence was monitored continuously from 15 min prior to Apo (or placebo) and for 75 min after injection. Three weeks after the last test, the patient was re-evaluated with Apo HCl (0.5 mg sc) after setting up an intravenous line in an arm vein to permit serial sampling during the procedure with a view to measuring changes in PRL levels associated with the erectile response.

RESULTS

Apo HCl (0.25 mg sc), but not placebo, induced an erectile response (data not shown). Following the initial test with Apo HCl (0.5 mg sc), an erectile response as previously described (Lal et al 1987), commencing within 10 min and lasting about 40 min, was observed (see Figure 1). When this test was repeated three weeks later, a similar response was observed except that each time blood was sampled (5 ml, at 25 min, 40 min and 55 min) there was a prompt decrease in tumescence followed by a complete or partial restoration of tumescence (see Figure 1). Subjectively, the patient experienced anxiety on seeing the syringe and blood being withdrawn. Samples were subsequently lost in storage and never assayed.

DISCUSSION

Hyperprolactinemia may induce impotence (Thorner et al 1974). The mechanism is unclear though impairment of DA function may underlie the effect (Lal 1988). Dopaminergic agents such as bromocriptine, which lower PRL levels, improve potency (Thorner et al 1974; Buvat et al 1985) in hyperprolactinemic patients, but not invariably (Leonard et al 1989). Failure to respond to dopaminergic agents may, in part, be related to the interaction with psychosocial factors. In this regard, anxiety may enhance (Barlow et al 1983) or decrease (Hale and Strassberg 1990) the erectile response to erotic videotape in normal subjects. The effect of anxiety on the erectile response to Apo (or other dopaminergic agents) has not been investigated. Though anxiety was not objectively measured, the subjective experience of anxiety by the patient on seeing blood withdrawn suggests that the inhibitory effect noted was related to anxiety. This observation points to the sensitivity of the Apo-induced erectile response to environmental procedures perceived by the patient as anxiogenic.

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REFERENCES


