Unexpected outcome (positive or negative) including adverse drug reactions

Unstable angina following intracavernous injection of alprostadil: a case study

Nicolas Barry Delongchamps, Guillaume Legrand, Marc Zerbib, and Michael Peyromaure

Cochin Hospital, Paris Descartes University, Urology, 27 Rue du Faubourg Saint Jacques, Paris, 75014, France
Nicolas Barry Delongchamps, Email: nicolasbdl@hotmail.com

Abstract

Intracavernous injection of alprostadil is the gold standard treatment for erectile dysfunction following radical prostatectomy. After surgery, low doses of alprostadil can be delivered for the sole purpose of penile rehabilitation. The only reported systemic side effects of such injections are arterial hypotension and headache. In the current report, a case of unstable angina immediately following an intracavernous injection of alprostadil is described.

BACKGROUND

The conditions most frequently associated with erectile dysfunction include cardiovascular disease, tobacco use and diabetes mellitus. Treating erectile dysfunction may increase the risk of myocardial infarction simply because of a modest increase in physical exertion during sexual intercourse. Practice guidelines therefore recommend evaluating the patient’s cardiovascular status before initiating treatment.1,2

Radical prostatectomy is one of the standard surgical treatments for localised prostate cancer. This intervention is associated with a high risk of postoperative erectile dysfunction. After radical prostatectomy, erectile dysfunction may be due to surgical damage of two lateral neurovascular bundles. Treatments for such erectile dysfunction include intracavernous injection of vasoactive drugs such as alprostadil, with a reported efficacy of more than 70%.3 In this treatment, prostaglandin E1 is delivered directly into cavernosal blood vessels to obtain an erection. Although alprostadil may be used on demand by patients, it has been suggested that early intracavernous injections three times per week after radical prostatectomy may be of great value for penile rehabilitation by improving tissue oxygenation and preventing penile fibrosis.4 Contraindications to such therapy include a history of priapism, sickle cell disease or trait, multiple myeloma and thrombocytopenia. Moreover, because of the small risk of priapism (1%),5 it is generally recommended that the first dose be administered under the supervision of a health care provider.

To our knowledge, the only reported systemic side effects of such injections are arterial hypotension and headache. In the current report, we describe a case of unstable angina following intracavernous injection of alprostadil.

CASE PRESENTATION

A 72-year-old man with localised prostate cancer underwent radical prostatectomy in our department. He was seen in the outpatient clinic 10 weeks after surgery. He had experienced acute angina 10 days after surgery, for which a coronary angiography had been performed, showing two stenoses of the first and second marginal coronary arteries of 70% and 60%, respectively. A medical treatment including nabivolol, irbesartan, lercanidipin, aspirin and atorvastatin had been introduced. The postoperative outcome was then uneventful; postoperative serum prostate specific antigen (PSA) was undetectable. The patient presented no urine leakage, but he complained of complete erectile dysfunction.
An intracavernous injection of 5 µg of alprostadil was performed in the clinic; 10 min after injection, the patient became lipothymic without thoracic pain.

INVESTIGATIONS

Clinical examination showed respiratory and cardiac frequencies at 35 breaths/min and 122 beats/min, respectively. Systolic and diastolic arterial pressures were 198 and 99 mmHg, respectively. An electrocardiogram (ECG) was performed immediately, showing apexian and inferolateral ST segment depression (fig 1). Serum troponin and creatine kinase were 0.04 ng/ml and 202 IU/litre, respectively. Echocardiography did not show any abnormality of the ventricular wall and the ventricular ejection fraction was measured at 71%. Coronary angiography showed a tight stenosis of the first marginal coronary artery (fig 2).

TREATMENT

Transluminal angioplasty was performed, followed by the placement of a stent (fig 3).

OUTCOME AND FOLLOW-UP

Immediate outcome was characterised by biological and electrographic normalisation. At 3-month follow-up, the patient did not express any complaint.

DISCUSSION

In patients with a recent history of coronary disease, recommendations suggest not to use any treatment for erectile dysfunction until cardiovascular status is stabilised. These guidelines are not related to the medications used for erectile dysfunction, but to physical exertion during sexual intercourse. In this case study, however, the aim of the treatment was not to enable sexual intercourse but early penile rehabilitation. In this specific situation, low doses are administered, with a usual rate of three times per week, and the injection is not followed by any physical exertion. For this reason, although this patient had experienced recent angina stabilised with medical treatment, no further considerations were raised concerning the introduction of intracavernous injections. In this patient, injection was immediately followed by myocardial ischaemia, while no physical activity could have been charged with having induced this effect. This clinical case tends therefore to raise the issue of a possible systemic effect of alprostadil on the coronary arteries, and to question the general notions acknowledged by clinicians.

The imputability of alprostadil alone in the advent of myocardial ischaemia in this patient may however be criticised. We hypothesise that the myocardial ischaemia was caused by a decrease of coronary blood flow due to hypotension, especially in the already strictured marginal arteries. Although hypotension may have been due to a systemic effect of alprostadil, it may also have been caused by a vagal reflex due to anxiety or pain following injection. The other medications taken by the patient, including β blockers and angiotensin 2 inhibitors, as well as calcium inhibitors, may have potentialised the hypotensive effect (if any) of alprostadil.

To our knowledge, this clinical case is the first to suggest a potential risk of intracavernous injections of alprostadil in patients with a recent history of coronary disease. Because of the lack of reported cases, this observation has to be interpreted carefully. Nevertheless, we would suggest differing intracavernous injections for penile rehabilitation in patients with a recent history of unstable angina.

LEARNING POINTS

- Treating erectile dysfunction may increase the risk of myocardial infarction.
- This risk was not reported to be related to the medication used but to a modest increase in physical exertion during sexual intercourse.
- Although penile rehabilitation with alprostadil is not followed by any physical exertion, we would suggest differing injections in patients with a recent history of unstable angina.
Footnotes

Competing interests: None.

Patient consent: Patient/guardian consent was obtained for publication.

REFERENCES


Figures and Tables
Figure 1

Pericritic electrocardiogram (ECG) showing apexian and inferolateral ST segment depression.
Figure 2

Left coronary angiography showing a tight stenosis of the first marginal artery.
Figure 3

Left coronary angiography performed after angioplasty and stenting of the first marginal artery.