

Case report-Olgu sunumu

Accidental intra-arterial diazepam injection: A case report

Yanlışlıkla intra-arterial diazepam enjeksiyonu: Olgu sunumu

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Abstract

Intra-arterial injection due to drug abuse is rare but it can be a potentially threatening condition for the limbs. Diazepam is a safe drug from the perspective of systemic side effects; however, its local complications can be catastrophic. In this study, we describe a case of acute ischemia of right hand secondary to peripheral vascular occlusive disease induced by intra-arterial diazepam injection. Occlusion of the distal arteries resolved after treatment with a synthetic prostaglandin analogue and anticoagulants.

Key words: Intra-arterial injection, diazepam, hand ischemia.

Özet

İlaç bağımlılığı nedeniyle intra-arteriyel enjeksiyon nadir ancak ekstremiteler için potansiyel tehdit oluşturabilecek bir durumdur. Diazepam sistemik yan etkileri bakımından güvenli bir ilaç olmasına karşın, lokal komplikasyonları katastrofik olabilmektedir. Bu çalışmada, intra-arteriyel enjeksiyon nedeniyle ortaya çıkan tıkaçıcı periferik damar hastalığına bağlı sağ elde gelişen bir iskemi olgusunu sunmayı amaçladık. Distal arterlerde oluşan oklüzyon sistemik prostasiklin analogu ve antikoagulan tedavi ile tekrar açılabilir.

Anahtar Sözcükler: İntra-arteriyel enjeksiyon, diazepam, el iskemisi.

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Introduction

Most of the current drugs are manufactured for oral or intravenous administration. The preferred way of administration to achieve immediate therapeutic effect is intravenous injection. However, accidental intra-arterial (IA) injections may also occur during these intravenous injections. IA administrations have been reported since 1940s [1]. Most of these cases occur accidentally during therapy as a result of arterial injection. However, rarely it occurs among drug addicts during self-injection [2].

Diazepam is commonly used for the treatment of convulsion, anxiety or epileptic seizures. It is considered as a safe drug from the perspective of systemic effects when

used orally or intravenously. However, local complications may be catastrophic. In this article, we aimed to present a case of drug addict who performs intraarterial diazepam injection.

Case Report

A 41-year old male patient presented to our clinic three hours after an accidental diazepam injection into right radial artery since he could not find a proper cephalic vein. He reported pain, swelling, discoloration and numbness in the forearm and fingers starting just after the injection and still present. When admitted to our clinic, patient was suffering from severe pain; he had edema, paresthesia, increased heat and severe cyanosis in all fingers (Figure 1). Though limited, finger movements were present. Radial and ulnar pulses were palpable. Doppler ultrasound revealed that main arterial structures were intact, but partial arterial narrowing which may indicate spasm were present. Rheomacrodex (500 ml/day) and prostacyclin (5 ng/kg-min) infusion were initiated to achieve hand circulation. Subcutaneous enoksaparin (40 mg twice daily), oral acetylsalicylic acid (300mg/day) and pentoxifylline (400mg/day) were started. Cyanosis of the fingers regressed on day-15, edema was decreased, ischemic lesion persisted only on thumb and index finger pulps and the patient was discharged (Figure 2).



Figure 1: Pre-treatment view of the hand.



Figure 2: Post-treatment view of the hand.

Discussion

Diazepam is a well-known and commonly used drug for its indications. However, it may cause severe complication leading to extremity amputations when accidentally injected via intra-arterial way. There are numerous articles reporting complications due to IA diazepam injections in the literature [3, 4]. There are also studies reporting that the intravenous diazepam administration may cause thrombophlebitis, and in rare cases, arterial circulation failure [5]. Pathophysiology of the thrombosis observed during IA injection is unknown. However, spasm occurring during the injection and crystallization of the drug are considered as main reasons in these cases [6]. Spasm occurring during the injection and thrombus formation impair distal circulation. Nevertheless, presence of the pulse does not necessarily indicate the severity of the complication in an accurate way [7].

When accidental IA injection is realized, immediate interruption of the injection procedure is recommended and arterial vasodilators such as papaverine or procaine should be injected at the same injection site without removing the needle. Moreover, systemic prostacyclin procedure could also be effective for the therapy [8]. Low molecular weight heparin is used to split coagulation cycle. Nonetheless, sympathectomy, nerve block, steroid, hyperbaric oxygen therapy are also suggested approaches [5]. Since, systemic prostacyclin treatment (Ilomedin, Bayer, Berlin, Germany) was adequate in our case, there was no need for other methods. In conclusion, IA injection seriously impairs arterial blood supply of the extremity and brings risk for amputation. Responsiveness of the patient to the therapy may rule out the need for amputation.

References

1. Van der Post CH. Report a case of mistaken injection of pentothal sodium into an aberrant ulnar artery. *S Afr Med J* 1942; 16: 182.
2. Charney MA, Stern PJ. Digital ischemia in clandestine intravenous drug users. *J Hand Surg* 1991; 16: 308-10.
3. Gori F, Moretti I, Mosca S, Pasqualucci A. Intra-arterial diazepam. Treatment and evaluation of a case. *Minerva Anesthesiol.* 1991; 57: 445.
4. Joist A, Tibesku CO, Neuber M, Frerichmann U, Joosten U. Gangrene of the fingers caused by accidental intraarterial injection of diazepam. *Dtsch Med Wochenschr.* 1999; 124: 755-758.
5. Mirzatlooei F, Afshar A. Intravenous injection of diazepam to cubital vein can be complicated by accidental intra-arterial penetration and gangrene. *Arch Iran Med.* 2008; 11: 469-71.
6. Knill RL, Evans D. Pathogenesis of gangrene following intra-arterial injection of drugs: a new hypothesis. *Can Anesth Soc J.* 1975; 22: 637-46.
7. Myrddin R, Dormandy J. Accidental intra-arterial injection of diazepam. *Br Med J.* 1980; 281: 289-90.
8. Mazzone A, Giani L, Faggioli P, Pichini S, Pacifici R. Cocaine-related peripheral vascular occlusive disease treated with iloprost in addition to anticoagulants and antibiotics. *Clin Toxicol (Phila).* 2007; 45: 65-6.