Accidental Intra-arterial Cannulation: an Unusual Case

Kavita Agarwal • Rekha Bharti • Achla Batra •
Aruna Batra

Received: 6 February 2014 / Accepted: 28 February 2014 / Published online: 9 March 2014
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Dear editor,

Mrs X, 21 years old G₃P₂ with premature rupture of membranes at 41 weeks gestation, had intravenous cannulation in cubital fossa for oxytocin augmentation. Oxytocin infusion was continued for 10 h. Thereafter, she was given intravenous injections of ampicillin and gentamicin. Immediately after injection, oedema of the forearm was noted which was thought to be due to extravasation of drug. Cannula was immediately removed, and magnesium sulphate ointment was applied locally. After 4 h, massive oedema and cyanosis were noticed in the forearm and hand distal to the cannula with absent radial pulsations, leading to a provisional diagnosis of brachial artery thrombosis. Urgent vascular surgeon consultation was obtained. By this time, cervix was fully dilated and patient delivered vaginally a 3-Kg baby, following which thromboembolectomy was done. Post thromboembolectomy, ultrasound Doppler revealed short segmental thrombus of the right brachial artery in distal one-third of arm; ulnar artery patent for only a segment of 3 cm from its origin and radial artery and veins patent throughout. Postoperative care included broad spectrum antibiotics, vasodilators, anticoagulants, limb elevation and dressings. Blisters were noticed over the dorsum of hand on postnatal day 2; diagnosis of compartment syndrome was made for which fasciotomy was done. Repeated ultrasound Doppler after 2 months revealed occlusion of short segment of right brachial

artery in cubital fossa, occlusion of right ulnar artery in forearm with multiple collaterals in forearm. Patient had complete resolution of sequelae with complete functioning of hand in 3 months.

Accidental intra-arterial anaesthetic drug injections have been reported previously [1]. It has been proposed that lipid soluble drugs are more problematic, and brachial artery is associated with more tissue damage than radial or ulnar [1]. The immediate clinical presentations include pain, pallor in hand and cyanosis of fingers followed by extensive oedema of hand and forearm within 5 h. Extensive injury includes nerve damage, compartment syndrome, thrombosis and gangrene leading to eventual amputation [2]. In this case, significant time elapsed before arterial catheterisation was discovered resulting in disastrous outcome.

In summary, vigilance is the best therapy. An indwelling catheter not functioning properly should never simply be assumed to be positional. Alarming signs include marked increase in blood pressure on flushing the line, bright red appearance of blood, more intense pain than expected, distal signs of ischaemia, manual palpation of arterial pulse proximal to the catheter and retrograde pulsatile blood flow. Diagnosis is by pressure transducer or blood gas analysis. Treatment recommendations include continuous heparin infusion for 24 h which, if done immediately, leads to no sequelae; sympathetic blockage with brachial plexus block, stellate ganglion block and general anaesthesia for further sympatholysis, postoperative limb elevation and maintenance of warmth, intra-arterial vasodilators and surgical exploration to extract thrombus and fasciotomy [2].

To conclude, a high index of suspicion of intra-arterial cannulation can prevent disastrous consequences.

K. Agarwal (✉) • R. Bharti • A. Batra • A. Batra
Dept. of Obstetrics and Gynaecology, Safdarjung Hospital, 92,
vrindavan apartment, gali no.4, Krishna nagar, safdarjung enclave,
New Delhi 110029, India
e-mail: drku93@gmail.com

It is recommended that if suspicion is high, intravenous catheterisation should be repeated unless situation is extremely dire and no other intravenous access is readily obtainable.

Conflict of Interest There are no conflicts of interest.

References

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