References

1. Yen JB, Kong MS, Lin JN. Hepatic mesenchymal hamartoma. *J Paediatr Child Health* 2003;39(8): 632-4.
2. Horiuchi A, Muraji T, Tsugawa C, et al. Laparoscopic fenestration of a neonatally detected hepatic mesenchymal hamartoma. *J Laparoendosc Adv Surg Tech A* 2005;15(4):432-4.
3. Barnhart DC, Hirschl RB, Garver KA, et al. Conservative management of mesenchymal hamartoma of the liver. *J Pediatr Surg* 1997; 32(10):1495-8.
4. Kwok WK, Spitz L, Brereton RJ, et al. Mesenchymal hamartoma of the liver. *Pediatr Surg Int* 1989; 4: 296-9.
5. Lennington WJ, Gray GF, Page DL. Mesenchymal hamartoma of liver: a regional ischemic lesion of a sequestered lobe. *Am J Dis Child* 1993; 147(2):193-6.
6. Tsao K, Hirose S, Sydorak R, et al. Fetal therapy for giant hepatic cysts. *J Pediatr Surg* 2002;37(10): E31.
7. Narasimhan KL, Radotra BD, Harish J, et al. Conservative management of giant hepatic mesenchymal hamartoma. *Indian J Gastroenterol* 2004;23(1):26.

Accidental Intra-arterial Injection of Adenosine in a Child with Supraventricular Tachycardia

Mandar B. Patil[1], MD; Sunita M. Patil[2], MD

1. DY Patil Deemed University and Medical College, Kolhapur, Maharashtra, India
2. Sangeeta Hospital for Children, Near Rankala, Kolhapur, Maharashtra, India

Received: *Jan 05, 2012*; Accepted: *Feb 17, 2012;*
First Online Available: *May 24, 2013*

Many case reports and incidences of accidental intra-arterial (IA) injection of medications have been published so far[1,2]. The common medications reported are barbiturates and benzodiazepines, including the anesthetic agents. There is only one case report of accidental intra-arterial injection of adenosine[3].

A 14 years old boy was referred from a peripheral hospital as a case of supraventricular tachycardia (SVT). He was complaining of palpitation and chest pain. His heart rate was 200/min and was hemodynamically stable (temperature 36.7°C, breath rate 25/min, blood pressure 110/70 mmhg, capillary refill time of 2 seconds, pulse oximeter oxygen saturation of 97% without oxygen administration and a normal sensorium). The body weight was 50 Kg. The systemic examination revealed S3 gallop and tender hepatomegaly. The ECG confirmed SVT. The vagal maneuver (carotid massage) failed. Intravenous adenosine was ordered. 22-gauge intravenous cannula was inserted into a superficial vessel over the radial styloid process at the base of the anatomical snuff box of the right wrist. The intravenous cannula was fixed after flushing with 1 ml of water for injection without pain or difficulty. The adenosine injection 5 mg was administered as a fast bolus followed immediately by rapid push of 10 ml isotonic saline with the help of a 3-way stop-cock. This immediately resulted in intense pain and flushing and hyperemia of the skin of the right hand. He complained of blurring of vision and dizziness. These symptoms completely disappeared spontaneously within 5 minutes. The cannula was not removed immediately. It was noticed that the black flow of blood was bright red in color. There was pulsatile movement of blood in the intravenous tubing with back flow of blood in the tubing when the saline bottle was attached to the cannula. Blood gas analysis from the cannula revealed pH_a 7.44, $PaCO_2$ of 34 mmHg, and a PaO_2 of 100 mmHg while the patient was not administered oxygen, confirming an inadvertent arterial cannulation. The cannula was removed and newly placed in the left cubital vein and a repeat dose of adenosine was administered uneventfully. The SVT converted to normal rhythm. The subsequent examination of the right hand revealed no abnormality.

The incidence of accidental intra–arterial cannulation and drug administration is reported to be as rare as 1 in 56,000 to as common as 1 in 3440[1,2]. Adenosine is the drug of choice in acute management of SVT in a hemodynamically stable patient[4]. It is a metabolite of adenosine triphosphate and has a very short half-life (1.5 s)[5]. The case reported by ter Schure et al[3] with accidental intra-arterial adenosine injection had a brief period of pain and mottling of skin and blurring of vision, dizziness and nausea. Our case had almost similar symptoms. Although

*** Corresponding Author; Address:** Plot No 23, Anita Vandan Sahanivas colony, Nagala Park, Kolhapur –416001, Maharashtra, India
E-mail: drmandarpatil@hotmail.com

intravenous adenosine is known to adversely cause facial flushing, headache, palpitations, light headedness, dizziness, blurring of vision and nausea, the local pain or discomfort and local flushing are not described. These adverse events were probably caused by intra-arterial injection of adenosine in the given case. In a clinical trial done by Costa et al[6], adenosine injection in the brachial artery caused increased forearm blood flow by activation of the afferent fibers in the forearm producing sympathetic stimulation in addition to local vasodilator effect. Another clinical trial by Sylven et al[7] reported that, adenosine injection into the brachial artery produced ischemia like pain or discomfort in the forearm. Pain or discomfort began 12 s after administration, reached its maximum after 17 s and disappeared after 40 s. These effects were dose dependant.

Due to very short half-life the adverse effects of adenosine quickly wear off when the drug is discontinued[8]. The effects of adenosine can also be quickly interrupted using aminophylline, which acts as an antidote.

The high-risk patients for intra-arterial cannulation and drug administration are those who are morbidly obese and have a darkly pigmented skin, in a critical care setting, hypotensive and those with a pre-existing vascular anomaly[2]. Our case probably had an anomalous radial artery termed as antebrachialis superficialis dorsalis radial artery which runs superficially past the radial styloid process - a site that is commonly used for cannulation of one of the terminal branches of the cephalic vein (often referred to as the intern vein)[9,10]. The prevalence of this anomaly is 1%.

Key words: Supraventricular tachycardia; Adenosine; Intra-arterial injection

References

1. Cohen SM. Accidental intra-arterial injection of drugs. *Lancet* 1948;255(6524):409-17.
2. Sen S, Chini EN, Brown MJ. Complications after unintentional intra–arterial injection of drugs: risks, outcomes, and management strategies. *Mayo Clin Proc* 2005;80(6):783-95.
3. ter Schure JM, de Vries TW. Accidental intra-arterial injection of adenosine in a patient with supraventricular tachycardia. *Cardiol Young* 2011; 21(5):601.
4. Ratnasamy C, Rossique-Gonzalez M, Young ML. Pharmacological therapy in children with atrioventricular reentry: which drug? *Curr Pharm Des* 2008;14(8):753-61.
5. Manjunath S, Sakhare PM. Adenosine and adenosine receptors: Newer therapeutic perspective. *Indian J Pharmacol* 2009;41(3):97-105.
6. Costa F, Biaggioni I. Adenosine activates afferent fibres in the forearm, producing sympathetic stimulation in humans. *J Pharmacol Exp Ther* 1993; 267(3):1369-74.
7. Sylven C, Jonzon B, Fredholm BB, et al. Adenosine injection into the brachial artery produces ischaemia like pain or discomfort in the forearm. *Cardiovasc Res* 1988;22(9):674-8.
8. Belardinelli L, Linden J, Berne RM. The cardiac effects of adenosine. *Prog Cardiovasc Dis* 1989; 32(1):73-97.
9. Bergman RA, Afifi AK, Miyachi R (1992-2004). Illustrated encyclopaedia of human anatomic variation. Opus II. Cardiovascular system: arteries: upper limb: radial artery. Available from: URL: http://www.anatomyatlases.org/AnatomicVariants/Cardiovascular/Text/Arteries/UpperLimb/Radial.shtml. Access date: Oct 23, 2011.
10. Brown MJ, Edstrom LE, Zienowicz RJ. A symptomatic radial artery anomaly and its surgical treatment. *J Hand Surg [Am]* 1999;24(1):178-81.

Pigmented Epithelioid Melanocytoma in a Child: Unusual Clinical Presentation

Teresa Pusiol*, MD; Morichetti Doriana, MD; Maria G. Zorzi, MD; Francesco Piscioli, MD

Institute of Anatomic Pathology, Rovereto Hospital, Italy

Received: *Sep 02, 2011*; Accepted: *Feb 10, 2012;*
First Online Available: *Jan 12, 2013*

Zembowicz et al[1] coined the term PEM for a "low-grade melanocytic tumor with metastatic potential indistinguishable from animal-type melanoma and epithelioid blue nevus". PEM is a distinct melanocytic tumor occurring in a sporadic setting and in the context of Carney complex. A 10 year-old child was referred for evaluation of a blue-black cutaneous macule found in the right pectoral region. The lesion measured 0.4×0.3 cm. The histology of the lesion showed a densely pigmented dermal nodule with infiltrative borders. The proliferation was composed of epithelioid and spindle melanocytes with heavy pigmentation; atypical cells were present (Fig. 1).

Immunohistochemically, the epithelioid cells showed strong positivity for Melan-A and HMB-

* **Corresponding Author; Address:** Section of Cytopathology, Institute of Anatomic Pathology, Rovereto Hospital, Rovereto, Italy

E-mail: teresa.pusiol@apss.tn.it