



VASC-ALERT ACCESS SURVEILLANCE CASE STUDY

PATIENT PROFILE

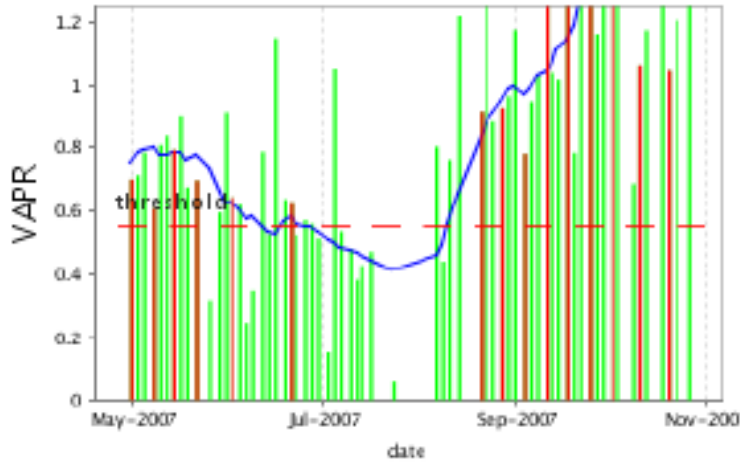
51 year old female
 Primary cause of ESRD: Hypertension
 Dialysis start date: 11/23/05
 Dialysis access: Left upper arm arteriovenous fistula
 Dialysis access placed: 9/23/03, revision 10/3/06
 Treatment time: 2.75 hours/165 minutes 3 times per week
 Ordered BFR: 400 ml/min
 Kt/V result at time of intervention: 1.64

The patient had consistent alerts for several months. The only other clinical sign or symptom that was indicative of access dysfunction or stenosis was that the patient periodically had prolonged bleeding post dialysis. The patient also had acceptable flow monitoring results as indicated by the table below:

Date	Time	Δt (min)	Mode	Access Type	Text
10/19/07	9:20	69	Access flow	Fistula	AF=2800 mL/min. MAP: 88 (117/74)
10/19/07	9:18	67	Access flow	Fistula	AF=2630 mL/min. MAP: 88 (117/74)
10/19/07	9:16	64	Access flow	Fistula	AF=2800 mL/min. MAP: 88 (117/74)
10/19/07	9:11	59	Recirculation	Fistula	No access recirculation.
10/19/07	9:07		Session		Treatment began: 10/19/07 8:11 AM. Pump flow: 300 mL/min. Measured flow: 325 mL/min. Weight: 53 kg
3/9/07	9:30	70	Access flow	Fistula	AF=1830 mL/min. MAP: 91 (129/72)
3/9/07	9:28	68	Access flow	Fistula	AF=1770 mL/min. MAP: 91 (129/72)
3/9/07	9:26	66	Access flow	Fistula	AF=1790 mL/min. MAP: 91 (129/72)
3/9/07	9:23	62	Recirculation	Fistula	No access recirculation.
3/9/07	5:27		Session		Treatment began: 3/9/07 8:20 AM. Pump flow: 300 mL/min. Measured flow: 305 mL/min. Weight: 48 kg
10/3/06			Access Revision	Fistula	Fistula @ left upper arm.
6/23/06	4:28	106	Access flow	Fistula	AF=1160 mL/min. MAP: 100 (127/86)
6/23/06	4:26	104	Access flow	Fistula	AF=1300 mL/min. MAP: 100 (127/86)
6/23/06	4:24	102	Access flow	Fistula	AF=1090 mL/min. Repeat: Release more saline. MAP: 100 (127/86)
6/23/06	4:19	97	Recirculation	Fistula	No access recirculation.
6/23/06	4:11		Session	Fistula	Treatment began: 6/23/06 2:42 PM. Pump flow: 300 mL/min. Measured flow: 300 mL/min. Weight: 59 kg
2/24/06	4:48	30	Access flow	Fistula	AF=1260 mL/min. MAP: 125 (162/108)
2/24/06	4:45	28	Access flow	Fistula	AF=1180 mL/min. MAP: 125 (162/108)
2/24/06	4:44	26	Access flow	Fistula	AF=1130 mL/min. Repeat: Release more saline. MAP: 125 (162/106)
2/24/06	4:39	22	Recirculation	Fistula	No access recirculation.
2/24/06	4:36		Session	Fistula	Treatment began: 2/24/06 4:17 AM. Pump flow: 300 mL/min. Measured flow: 320 mL/min. Weight: 54 kg
9/23/03			Initial	Fistula	Fistula @ left upper arm.

VASC-ALERT DATA

Venous Access Pressure Ratio



This patient had multiple high readings and alerts issued by Vasc-Alert. In the above VAPR graph the vertical green and red lines indicate the average VAPR for the dialysis session. The vertical red lines occur on dates where an alert was issued. The horizontal red dashed line is a pre-set threshold value. The blue line is a moving average which is used to visualize the trend of the graph more easily. The red arrow indicates when an intervention took place. The dates on the graph are in month/year format. Gaps in data are typically due to a lack of source data (missed treatment or hospitalization) or incomplete source data. For example, calculations may not have been made due to missing access type, needle gauge or blood pressure data.

HISTORY AND EXAM

The patient was sent for a fistulogram and no hemodynamically significant stenosis was noted. It was discovered and determined however that the patient did have hypertensive cardiomyopathy.

FINDINGS

2-D, M-Mode, and color Doppler studies were performed and were of good technical quality. The left ventricle was of normal size and function. The ejection fraction was estimated at 70%. There was severe concentric left ventricular hypertrophy noted. There was no segmental wall motion abnormalities noted. The left atrium was normal in size. The mitral valve appeared normal. Doppler interrogation of the mitral valve was normal. The aortic valve was trileaflet with normal leaflet excursion. Doppler interrogation of the aortic valve was normal. The right ventricle appeared to have increase in thickness of the right ventricular free wall consistent with right ventricular hypertrophy. Right ventricular size and function was preserved. The right atrium was normal in size. The tricuspid valve appeared normal. Doppler interrogation of the tricuspid valve demonstrated mild tricuspid regurgitation. The pulmonary artery systolic pressure was estimated at 42 mmHg. There was no pericardial effusion noted.

Impression:

1. Normal overall left ventricular size and function.
2. Severe concentric left ventricular hypertrophy.
3. Mild tricuspid regurgitation.
4. Mild pulmonary systolic hypertension.
5. Otherwise normal study as described.

SUMMARY

The patient went for access angiography and no hemodynamically significant stenosis was identified; however, because of the referral another major cardiovascular issue was identified.