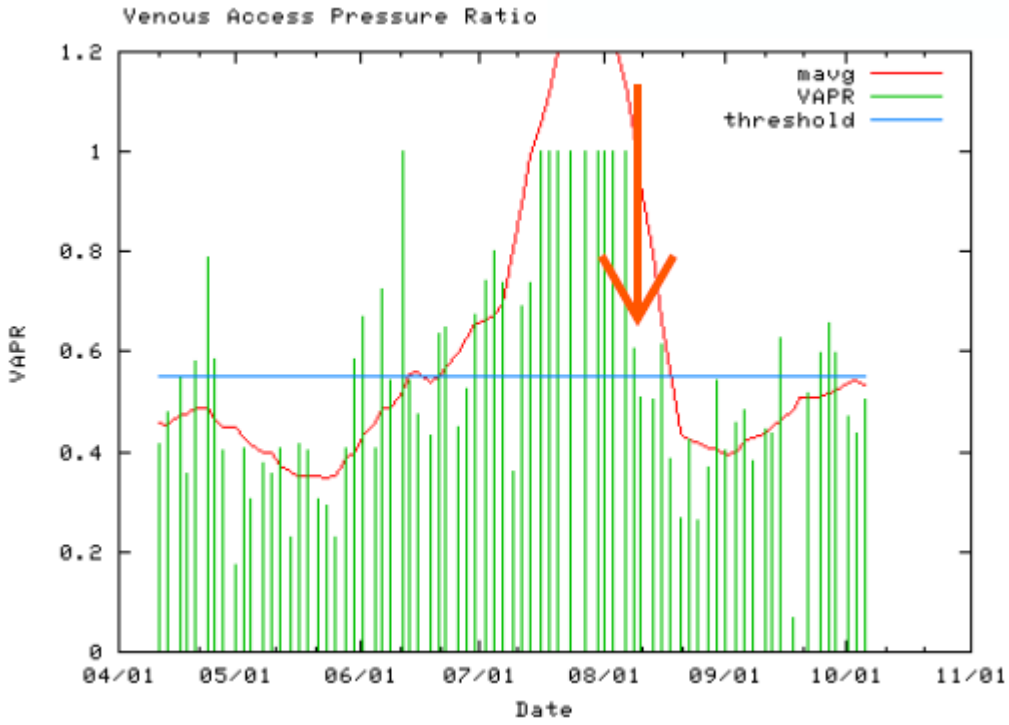
VASC-ALERT ACCESS SURVEILLANCE CASE STUDY

PATIENT PROFILE

60 year-old female
Primary cause of ESRD: Type 2 Diabetes
Dialysis start date: 10/07/05
Dialysis access: Left upper arm arteriovenous fistula
Dialysis access placed: 8/30/02
Treatment time: 3.5 hours / 210 minutes 3 times per week
Ordered BFR: 450 ml/min
Kt/V result at time of intervention: 1.49

VASC-ALERT DATA



This patient had multiple high readings and alerts issued by Vasc-Alert. In the above VAPR graphs each vertical green line indicates the average VAPR for the dialysis session. The horizontal blue line is a pre-set threshold value. The red 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/day format.

There were no clinical signs or symptoms that were indicative of access dysfunction or stenosis (e.g. no increase in venous pressure, no excessive bleeding, no decrease in blood flow, no difficulty in cannulation, no decrease in Kt/V), but the patient had consistent alerts and an increasing trend in VAPR results above threshold. The patient was sent for a fistulogram on 8/04/06 based solely on Vasc-Alert results and was determined to have significant stenosis, so an angioplasty was performed. The red arrow on the graph indicates the drop in VAPR values below the threshold immediately after a fistulogram and angioplasty.

PROCEDURE

The patient's left upper arm dialysis fistula is accessed near its presumed origin near the antecubital region. Through this, contrast is injected and images are taken of the entire fistula and the major draining veins of the left upper extremity. The same approach is used for fistula angioplasty in the outflow region described below.

FINDINGS

There is a well formed brachiobasilic fistula. No excessive collateral formation is seen.
There is an irregular narrowing where the fistula drains to the axillary vein near the left axilla with 80% eccentric narrowing here.
No inflow restriction is seen with rapid reflux of contrast and washout from the distal brachial artery.
The major draining veins of the left upper extremity including the axillary, subclavian and innominate veins are normal.
The outflow narrowing of the fistula is obliterated with the use of conventional angioplasty necessitating high pressure technique. This is brought to near-native caliber (9 millimeters).
Caliber inflow is improved following angioplasty.

IMPRESSION

1. Severe outflow restriction of a brachiobasilic fistula near the left axilla. This is described in detail above.
2. Above narrowing obliterated with conventional techniques.
3. No inflow restriction detected on this examination.
4. No central venous obstruction is seen. The patient s left upper arm dialysis fistula is accessed near its presumed origin near the antecubital fossa. Though this, contrast is injected and images of the fistula are taken. Images are also taken of the major draining veins of the left upper extremity to superior vena cava. Using the same approach, angioplasty is done of an outflow narrowing described above.

SUMMARY

The patient was sent for access study based on Vasc-Alert results and found to have a hemodynamically significant stenosis of 80% that was treated by angioplasty. Shortly after intervention the patient’s VAPR results returned to normal and fell below the threshold.