

Supplemental Data

Cytokine analysis: Plasma was analyzed using a multiplex assay which utilizes fluorescent dye-coated magnetic beads (MAGPIX magnetic bead based ELISA 40-plex assay [Millipore]) and a magnetic bead plate reader (Luminex MagPix [Luminex, Austin, TX]) according to manufacturer's instructions. The plate reader reports results as fluorescence intensity and mean fluorescence intensity is calculated from the area on the Luminex assay. Per manufacturer's instructions, plasma was diluted 1:100 for measurement of CCL5, PDGF-AA, PDGF-AB/BB and undiluted plasma was used for the 38plex (25ul/well). Unknowns were compared to serial dilutions of manufacturer-provided standards and controls. Assays were run in duplicate. In short, following overnight incubation with premixed beads on an agitator at 4°C, plates were washed. Detection antibodies were added to each well for an hour of incubation followed by the addition of streptavidin-phycoerythrin and another 30 minute incubation. Plates were washed and the beads were re-suspended in drive fluid and the plate was run on the MAGPIX with xPONENT software. All values are expressed in pg/ml.

Radiographic and clinical variables: The Hunt Hess (HH) scale was used by the attending physician to quantify each subject's clinical status at admission. The HH scale is a 1-5 point grading system that is typically used to assess an aSAH patient's clinical status at admission. Grade 1 indicates asymptomatic or mild headache. Grade 2 indicates of moderate to severe headache, nuchal rigidity, no neurologic deficit other than cranial nerve palsy. Grade 3 indicates drowsiness/confusion, mild focal neurologic deficit. Grade 4 indicates stupor, moderate-severe hemiparesis and grade 5 denotes coma, decerebrate posturing. Subjects were dichotomized based on their initial clinical severity into good ($HH \leq 3$) and poor ($HH \geq 4$) clinical status groups. Subjects were assessed for intraventricular hemorrhage (IVH), which is the presence of blood in the ventricles in the initial CT. The initial CT of each subject was assessed for the amount of blood in the arachnoid space using the Fisher grade scale. The *Fisher* grade is a 1-4 point grading system where grade 1 represents no apparent hemorrhage, grade 2 represents a SAH of <1mm thick, grade 3 denotes a SAH of >1mm thick and grade 4 represents a hemorrhage of any thickness with the presence of IVH or parenchymal extension. Subjects were followed up to identify the occurrence of delayed cerebral ischemia (DCI) was defined as the clinical deterioration attributed to vasospasm, or the presence of a new infarction on follow-up CT that was absent in the admission or postoperative scan, or both.

Table e-1: Comparison of patient demographics between included and excluded patients.

	Total N=124	Included patients N=45	Excluded patients N=79	<i>P</i>
Age, mean (SD)	54(14)	53(14)	55(15)	0.50
Female, N (%)	84(67)	36(80)	48(60)	0.04
Smoking, N (%) [†]	42(33)	19(42)	23(29)	0.19
Hypertension, N (%)	84(67)	29(64)	55(69)	0.60
Fisher3, N (%)	102(82)	40(88)	62(78)	0.22
HH,median(IQR)	3(2-3)	3(2-3)	3(2-3.75)	0.12
Hospital LOS* median(IQR)	14(11-20)	15(12-21)	14(9.5-20)	0.62
mRSd*(IQR)	2(1-4)	2(1-3)	3(2-4)	0.06
IVH, N(%)	87(70)	32(71)	55(69)	1
Mortality, N (%)	8(6.4)	3(6.6)	5(6.3)	1
DCI	37(30)	12(26)	27(34)	0.2

DCI: delayed cerebral ischemia, **LOS:** Length stay **SD:** standard deviation, **IQR:** inter-quartile range, **mRSd:** modified Rankin Score at discharge, **IVH:** Intraventricular score. †

During the study period (July 2013 to August 2014), 124 patients were admitted to our institution with an initial diagnosis of subarachnoid hemorrhage from the rupture of a cerebral aneurysm. Of the 124 patients, 78 patients consented to participate in the study. Of the 78 patients, 10 were partial consents and refused to provide any biological samples. Samples were available from only 68 patients. We were unable to obtain samples from all patients at all time points for many reasons. Firstly, it is not possible to obtain consent from all aSAH patients due to their neurological status and since the immediate family of the patient are not present during the time of admission, we were unable to obtain consent from either the patient or the family in a timely fashion. Secondly, for logistical reasons we had some time points missed. At times patients were not accessible from being in the operating room. And at other times, because of research resources i.e., availability of research team members to process samples, there were missing data points. Obtaining samples from later time points was difficult since the arterial and central lines are removed from most participants after a few days, and the participants are more likely to refuse blood draws for research as it causes extra discomfort to obtain these samples without the lines. 45 consecutively admitted patients who were able to provide samples on at least 3 time periods were included in the study.

Table e-2 : Patient demographics and history

	Total N=45	HH (≤3) N=37	HH (≥4) N=8	<i>P</i>
Age, mean (SD)	53(14)	54(13)	52(16)	.72
Female, N (%)	36(80)	30(81)	6(75)	.65
Smoking, N (%)	19(42)	18(48)	1(12)	.11
Hypertension, N (%)	29(64)	22(59)	7(87)	.22
Fisher3, N (%)	40(88)	32(86)	8(100)	.56
Hospital LOS* median(IQR)	15(12-21)	14(12-20)	16(11-24)	.68
mRSd*(IQR)	2(1-3)	2(1-3)	4.5(2.7-6)	<.01
IVH(IQR)	1(0-8)	1(0-7)	7(0.7-14)	.15
Mortality, N (%)	3(6.6)	0(0)	3(37)	<.01
DCI	12(26)	10(27)	2(25)	1

DCI: delayed cerebral ischemia, **LOS**: length of stay, **mRSd**: modified Rankin Score at discharge, **IVH**: Intraventricular score.

Table e-3: Patient demographics and history

	Total N=45	HH (≤2) N=22	HH (≥3) N=23	<i>P</i>
Age, mean (SD)	53.2(13)	53.5(13.4)	53(14)	0.9
Female, N (%)	36(80)	17(77)	19(82)	0.77
Smoking, N (%)	19(42)	10(45)	9(39)	0.89
Hypertension, N (%)	29(64)	12(54)	17(74)	0.29
Fisher3, N (%)	40(88)	17(77)	23(100)	0.02
Hospital LOS* median(IQR)	12(12-21)	13.5(11-17)	16(12.5-23)	0.06
mRSd*(IQR)	2(1-3)	1(1-2)	3(2-4)	<0.01
IVH, N (%)	32(71)	14(63)	18(78)	0.33
Mortality, N (%)	3(6)	0(0)	3(13)	
DCI	12(26)	6(27)	6(26)	1

DCI: delayed cerebral ischemia, **LOS:** length of stay, **mRSd:** modified Rankin Score at discharge, **IVH:** Intraventricular score.

