ABSTRACTS

Gregory L. Moneta, MD, Abstracts Section Editor

Descending Thoracic Aortic Aneurysm Repair: 12-year Experience Using Distal Aortic Perfusion and Cerebrospinal Fluid Drainage

Estrera AL, Miller CC III, Chen EP, et al. Ann Thorac Surg 2005;80: 1290-6.

Conclusion: There is a low incidence of neurologic morbidity and a relatively low mortality rate following descending thoracic aortic aneurysm repair when distal aortic perfusion and cerebrospinal fluid drainage are routinely utilized.

Summary: The authors sought to document their rate of neurologic deficit and mortality following thoracic aneurysm repair with routine utilization of distal aortic perfusion and cerebrospinal fluid drainage. There were 355 descending thoracic aortic aneurysms repaired at the author's institution between February 1991 and September 2004. Twenty nine patients were excluded from analysis because of involvement of the aortic arch and 26 patients with rupture were also excluded. There were therefore 300 patients analyzed for outcomes. Of these, 198 (66%) were men and 102 (35%) were women. Mean age was 67 years. A combination of distal aortic perfusion and cerebrospinal fluid drainage was utilized in 238 patients. There were 62 patients who underwent simple cross-clamp without utilization of distal aortic perfusion or CSF drainage.

There was a 2.3% incidence of neurologic deficit in this series (7 of 300 patients). The rate of neurologic deficits in the patients treated with cerebrospinal fluid drainage and distal aortic perfusion was 1.3% (3 of 238 patients). The rate of neurologic deficit in patients not treated with cerebrospinal fluid drainage and distal aortic perfusion was 6.5% (4 of 62 patients; $P < 0.02$). Neurologic deficits in both groups were only seen when the aneurysm involved the entire descending thoracic aorta. Predictors of neurologic deficit included use of cerebrospinal fluid drainage and distal aortic perfusion (odds ratio [OR] 0.19; $P = 0.02$), previous repaired abdominal aortic aneurysm (OR, 7.0; $P = 0.005$) and aneurysm that involved the entire descending thoracic aorta (OR 13.73; $P = 0.02$) and a history of cerebrovascular disease (OR 4.7; $P < 0.03$). Thirty-day operative mortality was 8%. Predictors of 30 day mortality were preoperative renal dysfunction (OR, 4.6; $P < 0.01$) and female sex (OR, 2.9; $P < 0.03$).

Comment: This paper from Dr. Safi's group in Houston indicates what is possible to achieve with open thoracic aneurysm repair. I doubt this volume of patients and this level of expertise is present in many institutions. Because of this, papers such as this cannot really be used to justify or not justify endovascular techniques of thoracic aneurysm repair. However, with data such as this it would seem silly not to provide, when possible, CSF drainage and distal aortic perfusion in patients undergoing open descending thoracic aortic aneurysm repair.

MRI vs Helical CT for Endoleak Detection After Endovascular Aneurysm Repair

Pitton NB, Schweitzer H, Herber S, et al. Am J Radiol 2005;185:1275-81.

Conclusion: MRI is far superior to biphasic CT scans for detection of endoleaks following endovascular aneurysm repair.

Summary: There were 99 patients treated with Nitinol based stent grafts between 1998-2003 at the author's institution. Of these 47 were excluded from analysis because they had follow up at another institution or did not agree to undergo both CT and MRI imaging in follow up or had claustrophobia or contrast allergy or poor renal function. Fifty-two patients therefore had follow up data sets that included MRI and contrast enhanced biphasic CT scans performed within 48 hours after stent graft placement and at 3, 6, and 12 months and yearly thereafter. Endoleaks were categorized as the percent of maximum cross sectional aneurysm area ($<3\%$, $>3\% \leq 10\%$, $>10\% \leq 30\%$, or $>30\%$).

There were 252 data sets available for analysis and 141 showed evidence of endoleak. Incidence of Types 1, 2, 3 and complex endoleak were 3.2%, 40.1%, 8.7%, and 4.0%, respectively. Sensitivities for endoleak detection for MRI, biphasic CT, uniphasic arterial CT, and uniphasic late CT were 92.9%, 44.0%, 34.8%, and 38.3%, respectively. Corresponding negative predictive values were 91.7%, 58.4%, 54.7%, and 56.1%. Overall accuracies for MRI, biphasic CT, uniphasic arterial CT, and uniphasic late CT, were 95.2%, 58.3%, 55.6%, and 57.1%, respectively.

Comment: The data clearly implied that endoleak rates after endovascular aneurysm repair are dependent upon the imaging modality utilized to detect the endoleak. MRI appears to detect more endoleaks than CT. It is interesting to speculate whether unexplained endotension after endovascular aneurysm repair essentially reflects undetected endoleak. Perhaps unexplained endotension after endovascular aneurysm repair would be explained far more often if MRI rather than CT was used routinely in the evaluation of endoleaks following endovascular aortic aneurysm repair.

Trends in Serum Lipids and Lipoproteins of Adults 1960-2002

Carroll MD, Lacher DA, Sorlie PD, et al. JAMA 2005;294:1773-81.

Conclusion: Total cholesterol and LDL cholesterol levels show continued decline from 1960-2002 with attainment of the target value of no more than 17% of US adult population of having a total cholesterol level $\geq$240 mg/dl.

Summary: Both total and low density lipoprotein (LDL) cholesterol levels have been followed by the National Health and Nutrition Examination Surveys (NHANES) from 1960-2002. Overall both total and LDL cholesterol levels have tended to decrease. This study focused on changes in LDL and total cholesterol levels since the previous NHANES survey from 1988-1994. Blood lipid measurements were examined in 5 cross-sectional surveys in the US population during the periods 1960-1962, 1971-1974, 1976-1980, 1988-1994, 1999-2002. Mean serum total cholesterol, LDL cholesterol, high density lipoprotein (HDL) cholesterol and mean serum triglyceride levels and the percentage of adults with a total serum cholesterol $>$240 mg/dl were determined. There were from 6,000 in 1998 to 15,019 adults examined in the 5 district cross-sectional surveys.

Between 1988-1994 and 1999-2002 total cholesterol level of 20 years or older adults decreased from 206 mg/dl to 203 mg/dl ($P = 0.009$). LDL cholesterol levels decreased from 129 mg/dl to 123 mg/dl ($P < 0.001$). Men who are $>$60 years of age had more significant decreases than women $>$50 years of age. Overall, the percentage of adults with a total cholesterol level 240 mg/dl decreased from 20% during the period of 1988-1984 to 17% during the period of 1999-2002 ($P < 0.001$). Mean HDL levels did not change and there was a nonsignificant increase in mean serum triglycerides ($P = 0.06$).

Comment: The data indicate continued and sustained progress in reducing cholesterol levels in the US population. Now only 17% of the US adult population has a total cholesterol level 240 mg/dl. Clearly there is still room for improvement and further analyses targeting the ability to reduce cholesterol levels in patients particularly at high risk for coronary disease and other forms of vascular disease is required.

Secondary Prevention of Macro Vascular Events in Patients With Type II Diabetes in the PROactive Study (PROspective Pioglitazone Clinical Trial and Macro Vascular Events): A Randomised Controlled Trial

Dormandy JA, Charbonnel B, Eckland DJA, et al. Lancet 2005;366:1279-89.

Conclusion: In patients with Type II diabetes felt to be at high risk for macro vascular events, Pioglitazone reduces the combination of all cause mortality, non fatal myocardial infarction, and stroke.

Summary: This study sought to evaluate the effects of an antagonist of peroxisome proliferator-activated receptor gamma for its ability to reduce macro vascular complications in patients with Type II diabetes. This was a prospective, randomized control trial involving 5,238 patients with Type II diabetes and who had evidence of macro vascular disease. Patients were recruited from both hospitals and primary care practices. Patients were divided into two groups with one group treated with a titrated dose of pioglitazone from 15 mgs to 45 mgs (n = 2,605) with the second group being a placebo control (n = 2,603) study. Medications in both groups were taken in addition to glucose lowering drugs and other indicated medications. The primary end point in the study was a composite of all cause mortality, non fatal myocardial infarction, stroke, acute coronary syndrome, and endovascular or surgical intervention in the coronary or leg arteries, or amputation above the ankle. An intention to treat analysis was utilized.

There were only two patients lost to followup in this study. Average observation time was 34.5 months. In the pioglitazone group, 514 patients had at least one event in the primary composite end point versus 572 patients in the placebo group (hazard ratio 0.9, 95% CI, 0.8-1.02, $P = 0.095$). With regard to the combination of all cause morality, non fatal myocardial infarction, and stroke, 301 patients in the Pioglitazone group and 358 patients in the placebo group achieved this end point (hazard ratio 0.84, 95% CI, 0.72-0.98, $P = 0.027$). There was no change in the safety profile of Pioglitazone noted. During the course of the study, 6% of the patients in the Pioglitazone group and 4% in the placebo group were admitted to the hospital with heart failure. There was no difference in mortality rates from heart failure between the two groups.

Comment: Pioglitazone reduces levels of inflammatory markers such as C-reactive protein. These effects are independent of its affect on glycemic