Pathology-2013

OMICS Group Conferences
Accelerating Scientific Discovery

2nd International Conference and Exhibition on
Pathology

August 05-07, 2013 Embassy Suites Las Vegas, USA

Can the aortic wall communicate with us?

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Abstract

OBJECTIVE: Association between aortic aneurysm wall and risk of rupture or dissection.

METHODS: Aortic specimens were obtained from 73 patients (51 men and 22 women, whose median age 61.7± 10.7 years) undergoing surgical repair of thoracic ascending aneurysm (TAA). Histopathological and immunohistochemical analyses were performed using adequate tissue specimens, appropriate techniques and criteria. Furthermore, genetic risk factors were also investigated.

RESULTS: We identified three phenotypes of TAAs with different quality of aortic wall at the time of operation: phenotype I (normal wall); phenotype II (moderate wall thickness); phenotype III (thin and weak wall). No significant differences were detected in term of demographic and clinical data, co-morbidity conditions and pharmacological treatments. In contrast, significant statistical differences were observed by comparing abnormalities of ECM components among three phenotypes (fibrosis $p<0.005$; elastic fragmentation $p=0.002$; medionecrosis $p=0.004$; cystic necrosis $p=0.07$; apoptosis $p<0.0001$; MMP-9 amount $p=0.004$). In addition, significant differences both in genotype distributions and allele frequencies were observed for following SNPs: -1562C/T MMP-9, -786T/C eNOs and D/I ACE.

CONCLUSIONS: Aneurysm with thin and weak wall at the time of operation should seem genetically and mainly associated with extracellular matrix disorders of aorta wall and consequently with aorta aneurysm complication (rupture and dissection).