CHRONOLOGIC AND CLIMATIC FACTORS PRECIPITATE ACUTE AORTIC DISSECTION: A STUDY OF 1642 PATIENTS IN TWO CONTINENTS

Poster Contributions
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Background: To study if chronologic and climatic factors affect the onset and early mortality of acute aortic dissection (AD).

Methods: We included 1642 AD patients admitted from March 1981 to December 2013 at Beijing Anzhen Hospital, China and Yale New-Haven Hospital, Connecticut, USA. The incidence and early mortality of ADs were analyzed with regard to the season, month, weekday, moon phase and holiday, and temperature, wind speed and atmospheric pressure on the day when AD occurred.

Results: Mean age was 51.6 ± 13.1 and 1260 (76.7%) were men. AD was types A in 1119 (68.1%) cases and B in 523 (28.6%). There were 190 (11.6%) early deaths, including 89 preoperative aortic ruptures and 101 operative deaths. There were 552 (33.6%), 408 (24.8%), 283 (17.2%) and 399 (24.2%) occurrences in winter, spring, summer and autumn, respectively. The incidences of onset (33.6%, 552/1642) and aortic rupture (33.6%, 29/552) were remarkably higher in winter (P < 0.01). In a week, the incidence was highest on Wednesday (15.5%) and Monday (15.2%), and lowest on Sunday (12.8%). No significant seasonal and weekly variation in early mortality was found (P > 0.05). Incidence of type A AD was remarkably higher in the full moon phase (73.7%, 286/388) than other moon phases (66.9%, 839/1254; p = 0.012). ADs occurring in the new (13.7%) and full moon (12.6%) phases, and in holidays (13.4%) had higher early mortality. Month-specific incidence was significantly correlated to the mean temperature inversely (r = -0.650, P = 0.022) and to the atmospheric pressure positively (r = 0.706, P = 0.001).

Conclusion: AD exhibits a significant chronologic variation in the rates of occurrence and aortic rupture, with the highest incidence in winter and on Wednesdays, and lowest in summer and on Sundays. The incidence of type A AD is higher in full moon phase. ADs occurring in full and new moon phases, and during holidays had higher early mortality. The incidence is significantly correlated inversely to the mean temperature and positively to mean atmospheric pressure. These results are important for understanding the mechanisms involved in triggering AD events, as well as for better prevention, diagnosis, and management of patients at risk throughout the year.