

Moxifloxacin elevates the risk of aortic aneurysm and aortic dissection by increasing osteopontin protein expressions in macrophages

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Backgrounds: Aortic aneurysm and aortic dissection are major lifethreatening diseases worldwide. Osteopontin (OPN), an inflammatory extracellular matrix protein, is involved in the formation and development of abdominal aortic aneurysms. Fluoroquinolone derivative is one of the most widely used antibiotics. Clinical studies have indicated that fluoroquinolone may be associated with an increased risk of aortic aneurysm and aortic dissection. However, this mechanism remains obscure. The aim of this study was to examine the effects of fluoroquinolone, ciprofloxacin, levofloxacin, and moxifloxacin on the protein expression of OPN in macrophages (RAW264.7 cell).

Results: OPN protein expressions were dose-dependently increased by moxifloxacin; these increases reached at peak at 300 μ M moxifloxacin. In addition, OPN expressions were time-dependently increased by moxifloxacin; these increases reached at peak at 24hr after exposure. Next, to evaluate the effects of fluoroquinolones on OPN protein expressions in macrophages, RAW264.7 cells were treated with ciprofloxacin, levofloxacin, and moxifloxacin for 24hr (each 300 μ M). Moxifloxacin significantly increased the protein expression of OPN in RAW264.7 cells compared with vehicle, ciprofloxacin, and levofloxacin.

Conclusion: These finding suggest that moxifloxacin may increase the risk of aortic aneurysm and aortic dissection by upregulating OPN protein expressions in macrophages.