遅発性ステント血栓症に関する死体解剖から得られた情報

薬剤溶出ステントを植え込まれた患者の死体解剖の結果、遅発性ステント血栓症には同定可能なリスクファクターがあることが示唆された

Autopsy series on patients with drug-eluting stents suggests there are identifiable risk factors for late stent thrombosis

死体解剖の研究から遅発性ステント血栓症に関する知見が得られた、とESCで発表された。研究者らは、死亡から30日以上前に薬剤溶出ステントを植え込まれた患者83人（117部位）の死体解剖を行った。計33部位が壁在血栓（25部位）または器質化血栓（8部位）であった。5人の患者（うち3人は突然死し、2人は心筋梗塞を発症）はステント周囲に過敏性反応を起こしていた（ステント植え込み期間112～940日）。ステント血栓症のリスクを上昇させる因子は、不完全密着（8人）、分岐部へのステント留置（7人）、急性心筋梗塞（8人）、およびステントのオーバーラップ（4人）であった。CypherおよびTaxusステントのいずれも遅発性治癒による内膜形成を軽減した。しかし、それぞれのステントに対する反応には違いがあった。フィブリンの沈着はTaxusステントでより高頻度であり、炎症（特に抗酸球浸潤および巨細胞反応）はCypherステントでより多かった。

Full Text

An autopsy series of patients with drug-eluting stents gives new insight into late stent thrombosis, including possible identification of risk factors, according to a presentation at the annual meeting of the European Society of Cardiology.
The stents currently approved in the USA (CYPHER and TAXUS) have been associated with late stent thrombosis (thrombosis more than 30days following implantation). Then current autopsy study was designed to analyze morphologic changes occurring after placement of drug-eluting stents to determine the causes of late stent thrombosis.

Researchers autopsied 83 patients (117 lesions) with coronary artery disease who had drug-eluting stents in place for more than 30 days prior to death. A total of 33 lesions showed either luminal thrombus (25 lesions) or organized thrombus (8 lesions).

Of the 117 total lesions, 6 (in five patients) showed a hypersensitivity reaction (5 Cypher, 1 Taxus).The six stents had been in place from 112 to 940 days; three patients died suddenly and two presented with acute myocardial infarction. From these data it appears that response is limited to the area of the stent, and there is extensive eosinophilic and T-cell infiltration. There may or may not be a granulomatous reaction.

Other morphologic changes that predisposed to stent thrombosis were malapposition (8 patients), stenting of bifurcation lesions (7 patients), acute myocardial infarction (8 patients), and overlapping stents (4 patients). All showed delayed healing, which was further exaggerated either from turbulent flow at malapposition or bifurcation sites or poor healing at sites of plaque rupture or overlapping stents.

Excessive length (more than 30 mm) was a correlate of late thrombosis as well as presence of uncovered stent struts. Uniformly, all cases with thrombi had the presence of fibrin, poor stent coverage by neointima, and less endothelialization.

All 78 lesions that were patent (and drug-eluting stent was not the cause of death) and had been in place for more than 30 days showed less neointima compared with bare metal stents, suggesting that drug-eluting stents are effective in reducing neointimal thickness. A parameter uniformly observed in bare metal stents is that neointimal formation around the circumference of the stent tends to be uniform in distribution. In drug-eluting stents, there is heterogeneity of healing with areas showing excessive fibrin and others with smooth muscle cells within matrix and uneven luminal endothelialization.

Both Cypher and Taxus stents reduced neointimal formation from delayed healing. However, there were inherent differences in the response to each stent, with fibrin deposition more frequent in Taxus stents and inflammation, especially eosinophilic infiltrate and giant cell reaction, greater in Cypher stents.