Pathology of Myocardial Protective Effect of IMPELLA Support After ST-Elevation Acute Myocardial Infarction

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Figure. (A, B) The proximal portion of the left anterior descending coronary artery is (A) occluded and (B) reperfused by the bioabsorbable-polymer everolimus-eluting stent. (C) The catheter-based left ventricular assist device IMPELLA 2.5 is inserted immediately after intervention. (D, E) Restriction of hemorrhagic infarction at the septum of the heart base. (F–K) Hematoxylin-eosin stain. (F, I) Septum shows massive interstitial hemorrhage (E, arrowheads). (G, J) Myocardial segmentation is seen adjacent to the hemorrhage. (H, K) Subendocardial anterior wall shows coagulation necrosis with few areas of inflammation. Scale bars: E, 1 mm; F–H, 200 μm; I–K, 50 μm.
An 84-year-old man was admitted due to ST-elevation myocardial infarction (Figure A) and underwent implantation of a bioabsorbable-polymer everolimus-eluting stent (Synergy 3.5×24mm; Boston Scientific, Marlborough, MA, USA; Figure B). Onset to reperfusion time was approximately 200min. The catheter-based mechanical left ventricular assist device, IMPELLA 2.5 (Abiomed, Danvers, MA, USA) was implanted immediately after reperfusion (Figure C). Eight days after admission, the patient died of pneumonia. Autopsy indicated unusual focal hemorrhage in the septum restricted at the base of the heart (Figure D,E; white line, mapping of ischemic change).

Histology showed interstitial hemorrhage in the septum (Figure F,I). Segmentation was observed adjacent to the hemorrhage (Figure G,J). The anemic infarction consisted of coagulation necrosis with few areas of inflammation (Figure H,K). No granulation tissue was observed. This first autopsy case after IMPELLA support for ST-elevation acute myocardial infarction demonstrates the protective effect on myocardium, derived from the suppression of reperfusion injury and inflammation.

Disclosure
A.H. is a member of Circulation Reports’ Editorial Team.