Objective To observe the long-term native coronary arterial responses after implantation of biodegradable polymer-coated sirolimus-eluting stent (BSES) in patients with acute coronary syndrome (ACS) using virtual histology intravascular ultrasound.

Methods Forty-one ACS patients were enrolled in this study and virtual histology intravascular ultrasound (VH-IVUS) was performed to assess the native artery vascular responses to BSES compared with durable polymer-coated SES (DSES) during long-term follow-up (median: 8 months). The incidence of necrotic core abutting to the lumen was evaluated at follow-up.

Results With similar in-stent late luminal loss (0.15 mm (0.06–0.30) mm vs 0.19 mm (0.03–0.30) mm, $p>0.05$], the overall incidence of necrotic core abutting to the lumen was significantly less in BSES group than in DSES group (44% vs 63%, $p<0.05$). The DSES-treated segments had a significant higher incidence of necrotic core abutting to the lumen through the stent struts (73% vs 36%, $p<0.01$). In addition, more multiple necrotic core abutting to the lumen was observed in DSES group (overall: 63% vs 36%, $p<0.05$). Furthermore, when the stented segments with necrotic core abutting to the lumen had been taken into account only, DSES-treated lesions tended to contain more multiple necrotic core abutting to the lumen through the stent struts than BSES-treated lesions (74% vs 33%), although there was no statistically significant difference between them ($p=0.06$).

Conclusions By VH-IVUS analysis at follow-up, a greater frequency of stable lesion morphometry was shown in lesions treated with BSESs compared with lesions treated with DSESs in the ACS population. The major reason was BSES produced less toxicity to the arterial wall and facilitated neointimal healing as a result of polymer coating on DES surface biodegraded as time went by.

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LONG-TERM EFFECTS OF BIODEGRADABLE VERSUS DURABLE POLYMER- COATED SIROLIMUS-ELUTING STENTS ON CORONARY ARTERIAL WALL MORPHOLOGY ASSESSED BY VIRTUAL HISTOLOGY INTRAVASCULAR ULTRASOUND IN PATIENTS WITH ACUTE CORONARY SYNDROME

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