Two weeks post treatment, vessels were harvested and hematoxylin and eosin (H&E) into the specified iliac artery to deliver 2.2 ml volumes of MLu (0.5 or 2.0 mg) or vehicle balloon denudation, followed by continued feeding of the high cholesterol diet for a further 12 weeks. The intimal cross sectional area was smaller in the sonodynamic therapy group than in the control, ultrasound, and PAD-S31 groups (23±7 versus 58±11, 53±14, and 29±9 mm², p<0.05). A significant decrease in macrophages in treated lesions in the 0.5 (7.46±1.73 versus 15.06±1.92, P=0.001) and 2.0 mg MLu (7.46±1.73 versus 15.06±1.92, P=0.001) photothermy groups, compared with animals receiving only light treatment. Conclusions: Photocatalysis of MLu within atheroma, after local delivery resulted in a significant decrease in macrophages and a small decrease in atheroma burden. These findings have implications for a possible effect of MLu phototherapy on plaque regression and stabilization.

Conclusions: Sonodynamic therapy with PAD-S31 is considered to be a feasible therapeutic option for non-invasively inhibiting neointimal hyperplasia in a rabbit iliac stent model. Local Motexafin Lutetium Delivery With Subsequent Photodynamic Therapy Reduces Macrophages and Atheroma Burden in a Rabbit Postbailloon Injury Model Kathryn W. Woodburn, Motaza Hayase, Paul Yock, Alan C. Yeung, Pharmacoconomics, Sunnyvale, California, Stanford University, Stanford, California. Background: Motexafin lutetium (MLu, Antdn® injection) is a phototherapeutic agent that selectively accumulates in atheromatous plaque where it can be activated by far-red light. In this study, we assessed the feasibility and impact of local MLu administration with subsequent near-infrared illumination on the intima/media ratio and macrophage burden in a rabbit post-balloon injury model. Methods: New Zealand white rabbits (n=20) were fed a 1% cholesterol diet. After 2-3 weeks, bilateral iliac artery lesions were induced by balloon denudation, followed by continued feeding of the high cholesterol diet for a further 2 weeks. Post injury delivery catheter (2Fr, Depuy, Scimed) was introduced into the specified iliac artery to deliver 2.2 ml volumes of MLu (0.5 or 2.0 mg) or vehicle (5% mannitol). Photocatalysis with endovascularly delivered light (photobiography) was performed 15 minutes after sensitizer delivery (781 jules/cm² at 830 mW/cm²). Two weeks post treatment, vessels were harvested and hematoxylin and eosin (H&E) and RM11 (macrophages) staining was performed. Results: Local administration of 2.0 mg MLu and subsequent photodestruction led to a significantly lower intima/media ratio compared with those animals receiving drug alone (1.44±0.75SEM versus 2.02±0.38, P=0.006). Quantitative planimetric analysis using RM11 positive cells revealed significant reduction of macrophages in treated lesions in the 0.5 (6.74±1.50 versus 15.06±1.92, P<0.001) and 2.0 mg MLu (7.46±1.73 versus 15.06±1.92, P=0.001) phototherapy groups, compared with animals receiving only light treatment. Conclusions: Photocatalysis of MLu within atheroma, after local delivery resulted in a significant decrease in macrophages and a small decrease in atheroma burden. These findings have implications for a possible effect of MLu phototherapy on plaque regression and stabilization.

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