A previously healthy 17-year-old female patient was referred to our clinic for new-onset hypertension. Physical examination revealed hypertensive retinopathy. Laboratory examination revealed erythrocyte sedimentation rate of 90 mm/h and C-reactive protein level of 0.43 mg/dl. Antinuclear antibody, antineutrophil cytoplasmic antibody, and hepatitis B viral antigen were all negative. Electrocardiogram showed normal sinus rhythm. Renal angiography demonstrated multiple fusiform and saccular aneurysms of right (A, Online Video 1) and left (B, Online Video 2) renal arteries with beaded appearance. Coronary angiography demonstrated ectatic right coronary artery (C, Online Video 3) and aneurysmal changes of left main and circumflex coronary arteries (D, Online Video 4). Exercise stress echocardiogram revealed negative findings. Polyarteritis nodosa involving renal and coronary arteries was diagnosed. Cyclophosphamide and 1 mg/kg/day of prednisolone were initiated and promptly normalized acute phase reactants. Aspirin and warfarin were added to antihypertensive medications. The patient is doing well on follow-up.