59-year-old woman was admitted because of lethargy. She had been treated for heart failure for 5 years before admission, which progressed to include lower-extremity edema as well as orthopnea and nocturnal dyspnea. The serial ECGs and echocardiographic findings are summarized in Figs 1 and 2. Forearm skin, rectal (Fig 3), and endomyocardial biopsies (Fig 4) were performed. On the basis of our findings (Figs 1 through 4), the diagnosis of amyloidosis with cardiac involvement was confirmed. Placement of a permanent pacemaker (VVI type) for the treatment of complete atrioventricular block resulted in marked improvement in dyspnea and lethargy.

**Figure 1.** Serial ECG changes. Top, Sinus rhythm at 80 bpm with first-degree AV block (PR interval, 0.22 second) and right bundle-branch block. Middle, Sinus rhythm at 90 bpm with first-degree AV block (PR interval, 0.24 second), right bundle-branch block, and left axis deviation. Bottom, Complete AV block at 48 bpm and low voltage.

**Figure 2.** Top, Serial two-dimensional echocardiographic findings. Thickening of all myocardial walls and valves; "patch amorphous, high-intensity echoes" in left ventricular myocardium; and a small pericardial effusion were noted (top left). Bottom, Serial M-mode echocardiography showed gradual increase of interventricular septal, left ventricular posterior wall, and right ventricular wall thickness.

On the basis of our findings (Figs 1 through 4), the diagnosis of amyloidosis with cardiac involvement was confirmed. Placement of a permanent pacemaker (VVI type) for the treatment of complete atrioventricular block resulted in marked improvement in dyspnea and lethargy.
Figure 3. Lamina propria and mucosa of rectum (left) and dermis of skin (right) showing yellow-green birefringence after Congo red stain under polarizing microscopic examination (×100).

Figure 4. Top left, Amyloid material stained red within the cardiac muscle cells with Congo red stain (×100). Top right, Typical yellow-green birefringence after Congo red stain under polarizing microscopic examination (×100). Bottom, Positive reaction of amyloid material between atrophic cardiac muscle cells with monoclonal murine antibody of amyloid associated protein (×200).
Amyloidosis With Cardiac Involvement
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