Implantable loop recorders (ILRs) allow long-time rhythm monitoring in order to correlate unexplained symptoms with possible arrhythmias. In this case report, we describe a patient with unexplained syncope in which the ILR revealed the cause.

Case
A 35-year-old male patient with no apparent medical history was sent to our outpatient clinic for a second opinion because of unexplained multiple syncopes. Familial history revealed that his father was implanted with a pacemaker at the age of 42 due to ‘periodical

Figure 1  Outprint of an implantable loop recorder (REVEAL XT Medtronic®) showing a sinus-arrest of 24 s with also evidence of the subsequent fall of the patient with noise on the recording.
sudden illness. Most episodes occurred at rest while sitting, without any explaining triggers. He experienced no prodromal symptoms. One syncope had resulted in a car crash. An extensive neurological and cardiological investigation, including electrocardiogram, echocardiography, tilt-testing, carotid sinus massage, exercise-testing, Holter monitoring for 24 h, and event recording for 1 week, could not reveal an aetiology.

An ILR (REVEAL XT Medtronic®) was implanted. Two months later the patient visited the clinic again with a history of two syncopes. The ILR revealed a clear cause: a sinus-arrest for 24 s (Figure 1).

The sinus rate slowing before asystole suggests a vasovagal aetiology despite the negative tilt test. Given the length of the pause, the absence of prodomal symptoms or provoking circumstances, and the dramatic symptomatology (car crash), the implantation of a DDD-pacemaker was decided. No syncope occurred during a follow-up of 7 months after implantation.

Discussion
Implantable loop recorders are long-time heart rhythm monitors that allow correlation of unexplained symptoms with possible arrhythmias. The first devices originate from 1998. Implantable loop recorders have been improved in the meantime regarding longevity (currently 3.5 years) and with the addition of an auto-detection mode. An ILR recording can be triggered by the patient for 3 × 7.5 min recording time and/or by automatic detection (indications programmable) for 27 × 1 min.

CASE REPORT

Intra-His bundle block in second-degree Mobitz I atrioventricular block with right bundle branch block

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Because second-degree Mobitz I atrioventricular (AV) block is usually associated with a disturbance at the AV nodal level, and rarely at the infra- or intra-His bundle level, it has been considered as mostly benign in character. We report on a patient with intra-His bundle block in second-degree Mobitz I AV block with right bundle branch block.

Case report
An 82-year-old woman presented with syncope. She had a history of hypertension that was diagnosed 10 years ago, and was receiving a dihydropyridine calcium channel blocker. Chest X-ray revealed mild cardiomegaly, and echocardiography showed no regional wall motion abnormality with normal left ventricular ejection fraction. While the ECG on admission showed 2:1 AV block with narrow QRS complex, on the next day, it changed to second-degree Mobitz I AV block with right bundle branch block (RBBB). The patient underwent an electrophysiological study for site of conduction block. The multipolar catheters were placed in the right atrium, His bundle region, and right ventricle. At the simultaneous surface and intracardiac ECG recordings, an infra-His bundle block was shown during the 2:1 AV block. Moreover, the intracardiac ECG showed intra-His bundle block with progressive increase of the split of His bundle potentials during second-degree Mobitz I AV block (Figure 1). A permanent pacemaker was implanted because of the infra-His and intra-His bundle block in second-degree AV block with syncope. She remained free of symptoms thereafter.

Discussion
This case demonstrated second-degree Mobitz I AV block with RBBB in a symptomatic elderly patient that might be caused by block at the intra-His bundle level. Intra-His bundle block was first reported on an electrophysiological study by Narula et al. and it should be pointed out that concomitant 2:1 AV block and second-degree Mobitz I AV block is usually misinterpreted as second-degree Mobitz I AV block with an A:V conduction rate of 2:1 regardless of the level of block.

Although the narrow QRS duration in second-degree Mobitz I AV block suggests that the block site is restricted to the His bundle, in the case presented here, second-degree Mobitz I AV block with RBBB had an intra-Hisian block. The His bundle goes more frequently through the left rather than the right side of the crest of the muscular interventricular septum; however, RBBB may occur more frequently than left bundle branch block because the origin of the fibres follows the anatomical distribution of the His bundle, and the lesions in the His bundle occur both in the right and left fibres.

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