

What's the Diagnosis?

THIS ELECTROCARDIOGRAPHIC CHALLENGE IS PRESENTED BY DR. SANFORD LEFF, FELLOW IN CARDIOLOGY, THE ROOSEVELT HOSPITAL, NEW YORK CITY.

A 71-year-old man was admitted with a 24-hour history of dizziness, nausea, and precordial pressure. The ECG (right) showed a sinus rhythm with 2:1 AV block. The P-R interval of the conducted sinus beats is prolonged. There is no intraventricular conduction abnormality. Atropine, 1 mg IV, produced 1:1 AV conduction. Note Q waves with T wave inversions in the inferior leads; tall R waves in V_1 and V_2 ; and what appear as "hyperacute" tall peaked T waves in the anterior precordial leads. For Dr. Leff's diagnosis, see page 7.



Heparin Injected by Thrombophlebitis Into Abdominal Fat Pad—20,000 Units Every Day

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sign. These patients are first tried on 1.2 to 2.4 grams of enteric-coated aspirin daily, along with mechanical measures; but are switched to outpatient heparin if they do not respond within two weeks.

The third group, chronic thrombophlebitis, have long-standing calf swelling, ulceration, changes in pigmentation and minimal pain. The physicians at Downstate now treat specific complications with surgery and apply the outpatient heparin regimen only when the chronic condition flares up and becomes acute. During the first years of their study, they found that the heparin treatment was ineffective against chronic manifestations.

Dose Reduced in Some Patients

Individuals assigned to outpatient therapy are trained to inject heparin—usually 20,000 units a day—subcutaneously into the abdominal fat pad. "We use this dose in all our patients except those who are very old and frail and those weighing under 100 pounds," Dr. Stillman told CLINICAL TRENDS IN CARDIOLOGY. "For them, we reduce it to 10,000 units daily."

The patients are also advised to use means to keep their feet elevated while in bed, to swim or to walk at least a mile a day if their condition permits, to take hydrotherapy—or at least a warm bath—daily, and to wear elastic stockings or elastic leg wraps. Extended bed rest is not prescribed, the Brooklyn surgeon emphasized, but the patients are told to avoid prolonged standing and excessive exposure to sunlight, which is believed to have a thrombogenic effect by causing a release of serotonin.

The regimen is continued until the patients show either a clotting time of over 20 minutes and symptomatic improvement, or a clotting time of over 30 minutes without other evidence of improvement. At this point, Dr. Stillman and his colleagues begin tapering the heparin dose.

"At the beginning of treatment we're on an

every-day schedule," Dr. Stillman told CLINICAL TRENDS IN CARDIOLOGY. "Then we taper it to administration six days a week—usually eliminating the Sunday injection—then five days a week, then every other day. After that, the heparin injections are discontinued and the patients put on enteric-coated aspirin."

Simply reducing daily dosages during the tapering period is not feasible because the injections are prepackaged, he noted. "Also, we've found that the effect of heparin seems to last for two or three days anyway when it's given subcutaneously."



Dr. Stillman

"Furthermore, there's a psychological advantage doing it this way, a positive reinforcement. The patients know that when they start getting better there will be one day of 'vacation' a week when they don't have to stick that needle in themselves, and then two days, three days, and finally four."

The Downstate clinicians see their patients weekly until clotting times become stable; then once a month. Once the patients are switched to aspirin, they are seen twice at three-month intervals, and then at one and two years for checkups.

Pulmonary Symptoms Watched

"Of course, if the patient complains of any pulmonary symptoms during treatment, even the slightest, he's given an immediate chest examination, ECG and chest x-ray, and if there's any reason to suspect pulmonary embolus, a lung scan," Dr. Stillman said.

The incidence of complications caused by the heparin regimen was very small in the Downstate series, he reported, with only seven of the 407 patients developing clinically documented pulmonary emboli—none of them fatal—at any time during or after therapy. Abnormal bleeding during therapy occurred

in nine of the thrombophlebitis, with all episodes being minor and easily resolved. They included epistaxis, menorrhagia, joint hemarthrosis, rectal bleeding and one case of retroperitoneal hematoma.

"A bleeding episode once controlled is not considered a contraindication to reintroducing heparin therapy while closely monitoring clotting studies and hematocrit," Dr. Stillman stressed. And as for other possible heparin side effects, the Brooklyn physician noted one case of reversible alopecia and several febrile or urticarial reactions, but no osteoporosis, thrombocytopenia or anaphylaxis.

Excluding two anomalous patients, one of whom has received heparin on an outpatient basis for the past 10 years, and suffers confirmed recurrence of thrombophlebitis whenever therapy is halted, the maximum period of treatment has been about three years, Dr. Stillman said.

'No Intravenous Therapy'

"The important thing," he continued, "is that the most common type of thrombophlebitis—one who presents with acute pain in one leg—can be treated outside the hospital, without intravenous therapy, and without coumadin—which seems to us to be more dangerous than heparin. On the basis of our experience, we can be 78 percent sure that within six months of this therapy, the patient will show improvement both symptomatically and on strain-gauge plethysmography."

This does not mean that the vascular system returns to its prethrombophlebitic condition, he added. "Our plethysmographic studies seem to show that all these patients have some persistent abnormalities, usually a decrease in venous filling time."

Recurrences of acute thrombophlebitis have not been common, however. Almost three quarters of the outpatients on the heparin regimen had no recurrence.

As an added benefit, chronic progressive venous insufficiency following acute thrombophlebitis was almost totally absent in the Downstate patient group. "We have not seen the chronically swollen thrombophlebitic limb we've observed in outpatients treated by other techniques," he concluded.