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To the editor:

Liver therapy in anemia: a motion picture by William P. Murphy

On December 10, 1934, the Caroline Institute awarded that year's Nobel Prize in Physiology or Medicine to 3 American investigators: George R. Minot and William P. Murphy of the Harvard Medical School (Boston, MA) and George H. Whipple of the University of Rochester School of Medicine and Dentistry (Rochester, NY), "in recognition of their discoveries respecting liver therapy in anaemias." On December 12, 1934, Murphy delivered the Nobel Lecture and in the concluding paragraph stated, "Rather than enlarge further upon the details and results of the treatment of pernicious anemia, I shall now present, with your permission, a motion picture which will illustrate many points more clearly than I could discuss them here."[1] In this letter we present what we believe was the motion picture to which Murphy referred. The motion picture, made at the Peter Bent Brigham Hospital, emphasizes the superiority of parenteral liver extract to oral whole liver and liver extract in the treatment of pernicious anemia (PA). The movie (Movie S1, available at the *Blood* website; click on the Supplemental Movie link at the top of the online letter) was found in the Peter Bent Brigham Hospital and given to M.A.S., but the details of its rediscovery are unknown.

In 1900, Russell gave a full account of the spinal cord involvement in PA and coined the term "subacute combined degeneration of the spinal cord."[2] It was noted that hematologic abnormalities in patients with tropical sprue improved with a diet containing milk, meat, cod-liver oil, and oranges.[3] This observation led to successful use of similar treatments in patients with PA.[3] The hematopoietic properties of liver and meat were demonstrated by Whipple while working on dogs that had been bled to produce anemia.[4] Whipple demonstrated that the most effective dietary addition in chronic anemia was raw liver. Minot took detailed dietary histories from patients and noted that often his patients with PA excluded meat from their diets. Minot and Murphy started treating PA patients with liver. The diet recommended by Minot and Murphy consisted of 120 to 240 g cooked beef liver, 120 g or more of beef or mutton "muscle meat," and some vegetables, fruits, eggs, and milk taken daily.[5] They documented improvement in the red blood cell count and a sharp rise in the reticulocyte count.[6]

The accompanying video is approximately 7 minutes in length and is divided into 2 parts. In Part 1, Murphy illustrates the hematologic and neurologic signs and symptoms in PA. This is followed by an illustration of normal hematopoiesis and the derangements seen in PA. The last segment of the first part compares therapy with whole liver, oral liver extract, and concentrated extract for intramuscular injection. A demonstration of the intramuscular injection technique is also provided. The second part shows improvement in the peripheral smear with liver therapy. Murphy graphically illustrates the brisk reticulocytosis, the lag in increase in red cell count, and the greater effectiveness of parenteral therapy compared with oral therapy. The latter section of Part 2 deals with cost-effectiveness of the parenteral therapy and the importance of maintenance therapy.

Neeraj Kumar, Christopher J. Boes, and Martin A. Samuels

Correspondence: Neeraj Kumar, Department of Neurology, Mayo Clinic Bldg E-8 A, Mayo Clinic Rochester, 200 First St SW, Rochester, MN 55905; e-mail: kumar.neeraj@mayo.edu.

The online version of this letter contains a data supplement.

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To the editor:

The FIP1L1-PDGFRA T674I mutation can be inhibited by the tyrosine kinase inhibitor AMN107 (nilotinib)

A fusion of the *PDGFRA* and *FIP1L1* genes can be detected in cases of idiopathic hypereosinophilic syndrome (HES),[1] and the resulting tyrosine kinase constitutes a drug target for the treatment of this disease with the tyrosine kinase inhibitor imatinib mesylate (Gleevec; Novartis, Basel, Switzerland).[1,2] However, a mutation leading to threonine residue 674 in the FIP1L1-PDGFRA kinase domain being replaced by isoleucine is known to give rise to resistance to imatinib mesylate in patients with HES.[1,3] This T674I

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