

June 15, 1974

EPIDEMIOLOGIC NOTES AND REPORTS  
ANGIOSARCOMA OF THE LIVER - Connecticut

From January 1935 through December 1973, 8 cases of angiosarcoma of the liver were reported to the Connecticut Tumor Registry; the diagnosis of hepatic angiosarcoma has been confirmed in 6 of these cases by pathologists at the National Cancer Institute.

One case was diagnosed in 1950, 1 in 1967, and 4 in 1972 and 1973. The 1950 case occurred in a resident of north-central Connecticut, while the 5 more recent cases were found in residents of 4 closely adjacent communities in the southwestern portion of the state (Figure 1).

Two of the patients appear to have had occupational exposure to polyvinyl chloride (PVC). One, a 47-year-old man diagnosed in January 1973, had been employed for the 10 preceding years as an accountant in a factory which produces vinyl sheets and processes PVC resins; it is reported that he frequently visited the production area of the plant. Another patient, a 61-year-old man diagnosed in June 1973, had worked from 1933 through 1971 in an electrical products manufacturing concern, and from 1938 through 1963 he had operated

(Continued on back page)

ANGIOSARCOMA - Continued

machinery there which applied plastics containing PVC to wires as insulating material.

Another 2 patients who had no occupational exposure to PVC had been long-time residents of the Bridgeport-Stratford area. One of these was a 73-year-old man, diagnosed in 1967, who had lived his entire life within 2 miles of the electrical products factory mentioned above. He had worked as a firefighter from 1917 to 1942, as a metal worker from 1942 to 1944, and as a corset cutter from 1945 until his retirement in 1961; additionally he had a history of chronic alcohol ingestion. The other resident was an 83-year-old woman, a housewife and retired cook, who was diagnosed in December 1973. She had lived for 35 years within 1/2 mile of the vinyl products plant.

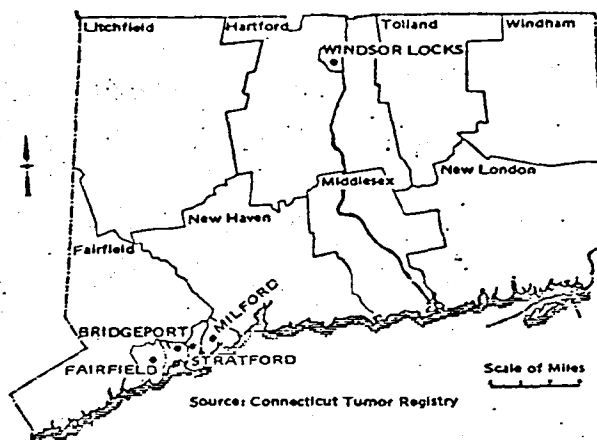
There was no history of occupational or of potential community exposure to PVC for the 2 remaining patients. One was a housewife in north-central Connecticut, the other an unemployed, disabled man with chronic alcoholism who had moved to Connecticut from New York City 4 months before his diagnosis in May 1973. None of the 6 confirmed patients had known exposure to thorium dioxide (1) or to arsenical compounds (2), 2 materials known specifically to induce angiosarcoma of the liver in man. By history, none had excessive exposure to aerosol sprays. None had a past history of hepatitis. Two had histories of alcoholism, as noted, but none are known to have taken other potentially hepatotoxic drugs or medications.

(Reported by Barbara W. Christine, M.D., Chief, Chronic Disease Control Section, Harold S. Barrett, M.D., Deputy Commissioner of Health, and Douglas S. Lloyd, M.D., Commissioner of Health, Connecticut State Department of Health; the National Institute of Occupational Safety and Health, and the Cancer and Birth Defects Division, Bureau of Epidemiology, CDC.)

Editorial Note

Recent reports (3,4) have described 13 cases of angiosarcoma of the liver among men engaged in the synthesis of

Figure 1  
CASES OF ANGIOSARCOMA OF THE LIVER  
BY PLACE OF RESIDENCE  
CONNECTICUT - 1935-1973



PVC from vinyl chloride monomer (VCM). There is evidence to suggest that VCM may have been the cause of hepatic angiosarcoma in those cases (5,6). In the present series 2 cases of hepatic angiosarcoma are described in men who had no known exposure to VCM, but who did work with PVC. While these findings establish no causal connection between exposure to PVC and angiosarcoma of the liver, they do raise the possibility of such a relationship. Further studies throughout the nation will be needed to define the possible risk factors in persons who have worked with PVC.

The additional finding in this study of angiosarcoma of the liver in 2 persons who had no occupational exposure to vinyl chloride, but who may have had community exposure, is also worrisome but again establishes no causal connection. It might be expected on the basis of data from the Third National Cancer Survey that approximately 4 cases of angiosarcoma of the liver would occur in Connecticut in a 10-year period and that approximately 0.6 cases would occur in the 4 previously mentioned communities in southern Connecticut during the same interval. Epidemiologic investigation of additional cases of hepatic angiosarcoma that may be found to have had possible community exposure to vinyl chloride will be necessary to clarify the significance of these cases.

References

1. da Silva Horta J, Abbatt JD, Cayolla da Motta L, Roriz ML: Malignancy and other late effects following administration of thorotrast. *Lancet* 2:201-205, 1965
2. Regelson W, Kim U, Ospina J, Holland JF: Hemangioendothelial sarcoma of liver from chronic arsenic intoxication by Fowler's solution. *Cancer* 21:514-522, 1968
3. Center for Disease Control: Angiosarcoma of the liver among polyvinyl chloride workers - Kentucky. *Morbidity and Mortality Weekly Rep* 23(6):49-50, 9 Feb 1974
4. Creech JL Jr, Johnson MN: Angiosarcoma of the liver in the manufacture of polyvinyl chloride. *J Occ Med* 16:150-151, 1974
5. Falk H, Heath CW Jr, Key MM: Unpublished observations, 13 May 1974
6. Maltoni C, Lefenine G: Carcinogenicity bio-assays of vinyl chloride: Current results. In Program of New York Academy of Sciences Working Group on Toxicity of Vinyl Chloride - Polyvinyl Chloride. New York City, 10-11 May 1974

The Morbidity and Mortality Weekly Report, circulation 36,000, is published by the Center for Disease Control, Atlanta, Ga.

Director, Center for Disease Control  
Director, Bureau of Epidemiology, CDC  
Editor, MMWR  
Managing Editor, MMWR

David A. Sencer, M.D.  
Philip S. Brachman, M.D.  
Michael U. Gregg, M.D.  
Deborah L. Jones, D.S.

The data in this report are provisional, based on weekly telegraphs to CDC by state health departments. The reporting week concludes at close of business on Friday; compiled data on a national basis are officially released to the public on the succeeding Friday.

In addition to the established procedures for reporting morbidity and mortality, the editor welcomes accounts of interesting outbreaks or case investigations of current interest to health officials.

Address all correspondence to: Center for Disease Control  
Attn: Editor  
Morbidity and Mortality Weekly Report  
Atlanta, Georgia 30333