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Transfusion AIDS In Virginia

Case Report*

A 52 year old white teacher and mother of three presented with a two week history of 15 watery bowel movements per day and a three month history of intermittent fevers, recently as high as 103 F. She was losing weight unintentionally. Three years prior to admission she had undergone an organ transplant operation which had necessitated the administration of over 500 units of various blood products. Postoperatively she had done well.

Stool culture was negative for enteric pathogens including *Yersinia, Vibrio,* and *Camplyobacter* sp. Acid fast stain of the stool revealed no *Cryptosporidium* oocysts but acid fast bacilli (AFB) were seen. Small bowel biopsy revealed loss of normal mucosal architecture and extensive infiltration of the bowel wall by AFB. Serologic tests for antibody to human immunodeficiency virus (HIV) were positive by both ELISA and Western Blot techniques. Presumptive diagnosis was enteropathy secondary to disseminated atypical mycobacteriosis (probably *M. avium-intracellulare*) complicating acquired immunodeficiency syndrome. Despite four antimycobacterial drugs and intensive care she expired after several weeks. She had no known risk factors for AIDS other than the multiple transfusions which she had received.

Epidemiology in Virginia

As of April 10, 1987, 401 cases of AIDS had been reported in Virginia. Of these, 23 (5.7%) were possibly associated with transfusion of blood products. Transfusion was the only known risk factor for 22; one was a Haitian immigrant who had been transfused. All patients had received blood products before screening of donated blood began in the spring of 1985. The underlying conditions which led to the use of transfusion were known for 11 cases; 7 (64%) were medical and 4 (36%) were surgical.

Ten patients were known to have received multiple transfusions and only one was known to have received a single transfusion (the number of units received was unknown for 12 patients). The median number of transfusions received was 20 for patients on whom data were available. The median incubation period, calculated using the last date of transfusion and the date of AIDS diagnosis for 20 cases where information was available, was 37 months. The husband of one female patient has tested positive for HIV antibody. In the absence of other known risk factors, his infection

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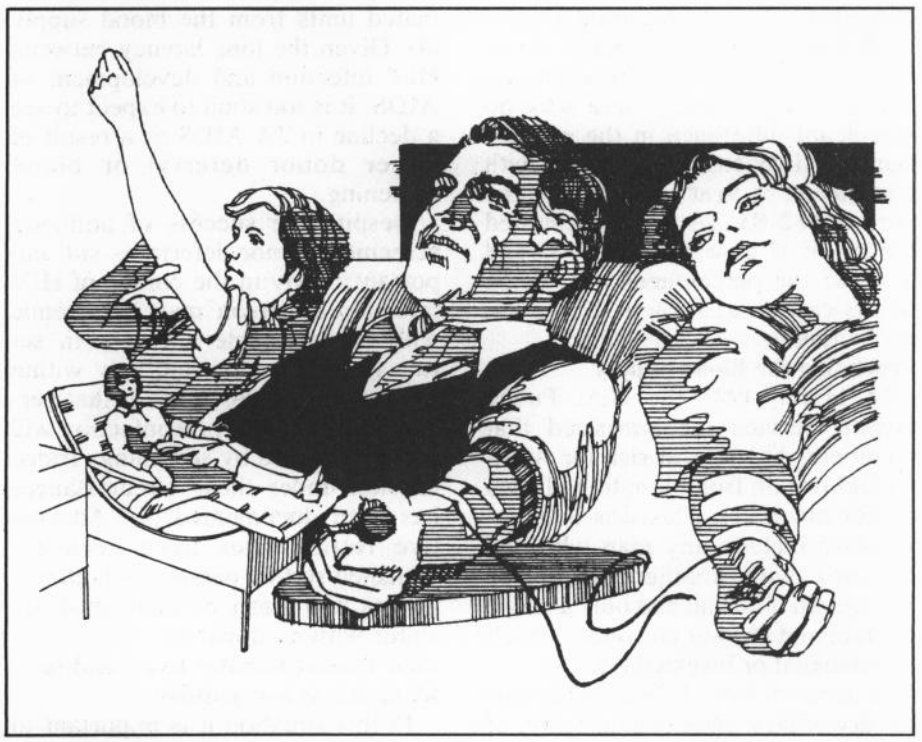
*Some details have been omitted to preserve the patient's anonymity.



may represent secondary heterosexual transmission from his wife.

The 23 cases possibly associated with transfusion were compared with the 378 cases where transfusion was not a known risk factor. Patients with transfusion-associated AIDS (TA) tended to be older than others. The mean age of TA patients was 48 years compared with 36 years for other patients ($P<0.02$ by Student's t test). TA patients were over three times more likely to be of white race (95% confidence limits [CI] 0.88 and 10.38). TA patients tended to affect males and females equally. By contrast, other patients were 20 times more likely than TA patients to be male (95% CI 6.75 and 59.80).

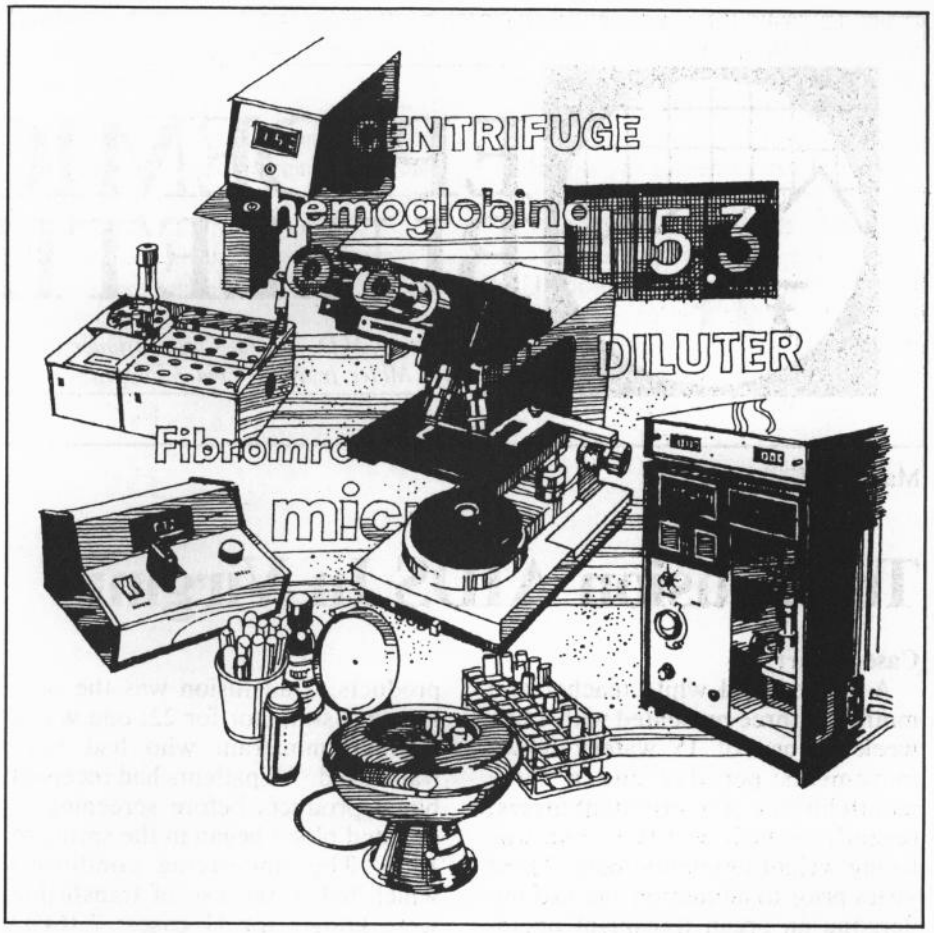
TA patients resided in a wide range of rural and urban localities, while many of the other patients clustered in a small number of urbanized areas. Other patients were over 14 times more likely than TA patients to reside in Alexandria, Arlington, Fairfax (County and City), Norfolk, Richmond City or Virginia Beach (95% CI 4.45 and 51.25).

TA patients appeared to be at less risk for Kaposi's Sarcoma (KS) than others, although the difference was not statistically significant. Only one (4%) of 23 TA patients was reported with KS, compared with 52 (14%) of 378 other patients. More of the TA patients (74%) were reported to have died than the other patients (59%) but this difference was also not statistically significant. There was no significant difference in the proportion of AIDS cases associated with transfusion by year of onset. For the period 1982–83, TA AIDS accounted for 0% of 31 cases; for 1984–85 and 1986–87 the percentages were 7.7% of 143 cases and 5.3% of 227 cases, respectively.

Protecting the Blood Supply

In March 1983 the U.S. Public Health Service recommended that members of groups at risk for AIDS should refrain from donating plasma and/or blood (1). This was later revised to include any man who had had sex with another man since 1977, even if he had had only a single contact and did not consider himself homosexual or bisexual (2).

In January 1985, following the discovery of HIV and the availability of serologic tests to detect HIV antibody, the U.S. Public Health Service recommended the screening of donated blood and plasma for antibody to HIV (3). This was instituted in the spring of 1985 and has proven effective in eliminating most contaminated units from the blood supply (4). Given the long latency between HIV infection and development of AIDS, it is too soon to expect to see a decline in TA AIDS as a result of either donor deferral or blood screening.



Despite the success of antibody screening, donor deferral is still important. Early in the course of HIV infection a person may be viremic without detectable antibody in serum (most develop antibody within 2–3 months of infection). If that person donates blood, his infection will not be detected by screening. Transmission under these circumstances has been documented (5). Alternative testing sites have been established so that persons in high risk groups can learn of their antibody status without donating.

Your Patient Donates Blood and Is Identified as Seropositive

In this situation it is important to determine what tests were performed. Current practice is that all donors are tested for HIV antibody by the ELISA method. The blood is accepted if the test result is negative. Two further ELISA tests are performed on the same unit if there is a positive result. If both are negative the unit is accepted. If one or both is positive then the unit is discarded and the donor is classified as a "repeatable reactor".

Nonprofit blood banks do an additional test for reactors, the Western blot test. This test is less likely to give a false-positive or false negative result (6). If the result is positive the donor is considered infected with HIV and the donor is notified. If the reactor's Western blot test result is negative, blood banks are encouraged to inform the donor that his blood is not usable, that he should not donate in the future, but that in all probability he is not infected. Some for-profit blood banks and plasmapheresis centers do not do Western blot testing; they are encouraged to explain this to the donor and refer him to a physician or agency where further testing and counseling can be conducted.

Even though the ELISA test is very sensitive and specific, positive results based on a single test must be interpreted with caution in the donor population, where the prevalence of infection is low. Because of this low prevalence there is a good probability that any one positive result comes from an uninfected individual. This is the reason for the repeat testing by ELISA and confirmatory testing by Western blot. Attempts to isolate HIV are resource-intensive and inappropriate for large scale screening.

The significance of seropositivity needs to be explained to patients whose blood is "repeatedly reactive" by ELISA and positive by Western blot testing. Such individuals are considered infected with HIV, possibly for life. They are potentially infectious to others by sexual activity, sharing drug injection equipment, childbearing, or by donation of blood, semen or organs. The prognosis is, unfortunately, still unclear. Few seropositive patients develop AIDS within the first two years after infection but thereafter the incidence may be as high as 6–7% per year.

Counseling patients so that they understand their test results, modify their behavior, and reduce the risks of transmission requires the cooperation of blood banks, physicians, and public agencies. Information on resources available to assist in such counseling may be obtained by calling the **AIDS HOTLINE AT 1-800-533-4148.**

Guidelines for the medical evaluation of persons found to be seropositive have been published (7) and are available by calling the number listed above. Testing for HIV antibody should be offered to persons who may have been infected as a result of their contact with seropositive individuals (e.g. sexual partners, persons with whom needles have been shared, infants born to seropositive mothers).

Your Patient Is Identified as a Recipient of Seropositive Blood

This situation may arise because a number of blood banks are conducting "look-back" programs, i.e. retrospectively identifying recipients of previous donations (before HIV screening became available) made by a donor found to be seropositive. Current evidence suggests that if a donor was seropositive at the time of previous donation then there is a very high likelihood that recipients of his blood are also now infected (8, 9).

These patients should be offered HIV antibody testing by the ELISA method. If the result is positive it should be confirmed by Western blot test. If that test is positive then the patient should be medically evaluated (for evidence of complications of HIV infection) and counseled as outlined above.

Your Patient Received a Transfusion Between 1978 and Early 1985

Patients transfused between 1978 and late spring 1985 received blood before screening for HIV antibody was instituted. Although the prevalence of infection among these recipients is expected to be low, it is estimated that there may be 12,000 people now living in the U.S. who acquired HIV infection from a transfusion received between 1978 and 1984 (10). Look-back programs (see above) are unlikely to identify all such individuals because many donors in high risk groups stopped donating blood (as recommended), or became too ill to donate, before screening of blood was started.

Physicians should consider offering HIV antibody testing to some of these patients. Who should be tested depends on the likelihood of infection in the recipient and the likelihood of transmission from that recipient. The risk of infection is greatest if the patient received a large number of transfusions and if the blood was collected during the few years before screening (the risk increasing from 1978 to 1984). Testing is particularly important if the patient is sexually active or a woman of childbearing age (10).

Your Patient Might Need a Transfusion

Patients should be reassured regarding the safety of the nation's blood supply. There is no evidence that directed donations (from friends and relatives) is any more or less safe than donations from the general public. The screening of blood for HIV antibody will prevent almost all potential cases of HIV infection acquired from transfusion, and represents one of the success stories of the AIDS research effort. All possible steps should be taken, however, to avoid unnecessary transfusions, keeping in mind that other infections are also transmitted by this means. There is a renewed interest in preoperative autologous blood donation (this does not include long-term frozen storage for unanticipated transfusions) and intraoperative blood salvage to reduce the risks of infection and relieve some demand on the blood supply (6, 11).

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A Tickborne disease of animals and humans

Lyme Disease

Lyme disease is an acute, multi-system, tickborne infection caused by the spirochete *Borrelia burgdorferi*.[1] Although Lyme disease was first described in human residents of Old Lyme, Connecticut in 1975,[2] it has since been reported to cause disease in dogs and horses as well.[3-6] Intensive surveillance along the east coast from Massachusetts to Virginia, and in Minnesota, Wisconsin, California and Oregon has identified endemic foci in these areas.[7] Many other states report isolated cases.[7] Since the first human case of Lyme disease in Virginia was reported in 1981, the number has increased each year. In 1986 there were seven cases reported from throughout the state.

Lyme disease cases occur primarily during the summer months.[7] The geographic distribution of cases in the United States tends to coincide with the distribution of Ixodid ticks.[7,8] However other arthropods such as Amblyomma ticks,[9] deer flies, horse flies, and mosquitoes have been implicated in transmission of the disease.[10] Deer, wild rodents and other wild animals are apparently reservoirs for the spirochete and maintain the cycle of the disease in nature.[7] *Ixodes dammini* is the tick vector most often associated with Lyme disease in the northeast U.S.,[8] but *Ixodes scapularis* is the Ixodid species documented to exist in Virginia.

Lyme disease is an inflammatory disorder which usually begins in humans with the skin lesion erythema chronicum migrans (ECM).[7,11] This lesion initially develops as a non-pruritic, red patch which, as the name implies, migrates peripherally over a period of several days to weeks, causing the lesion to grow in diameter and include an area of central clearing.[7,11] Sometimes there are multiple skin lesions.[7,11] The skin lesion may be accompanied or preceded by an acute febrile illness with malaise, fatigue, headache, stiff neck, myalgia, migratory arthralgias, or lymphadenopathy lasting several weeks.[7,11] Weeks to months later, the illness may be marked by repeated bouts of neurologic symptoms (aseptic meningitis, encephalitis, chorea, cerebellar ataxia, cranial neuritis including facial palsy, motor or sensory radiculoneuritis and myelitis).[7,11] Cardiac abnormalities including atrioventricular block, acute myopericarditis or cardiomegaly may occur within a few weeks after onset of ECM.[7,11] Weeks to years (usually about 4 weeks) after onset, swelling and pain in large joints, especially the knees, may develop and recur for several years; chronic arthritis may result.[7,11]

Lyme disease antibodies, as well as the spirochete itself, have been found in a variety of wild and domestic animals,[12-14] but pathologic lesions have only been reported for dogs and horses.[3-6] The disease in dogs presents as a chronic polyarthritis.[3,4] Arthritis and panuveitis have been reported in a pony.[6]

Present recommendations for human therapy include tetracycline for adults and penicillin for children during the ECM stage to prevent or lessen the severity of the major late cardiac, neurologic or arthritic complications.[7] The efficacy of various antibiotic regimens for animals are still under study.

Diagnosis of Lyme disease in humans is currently based on clinical findings and/or serology.[7] Sera from suspect *human* cases can be sent to:

Division of Consolidated
Laboratory Services
Attention: Serology Laboratory
1 North 14th Street
Richmond, VA 23219

for forwarding to the Centers for Disease Control (CDC). CDC considers an IFA titer of ≥ 1:256 or an ELISA O.D. ratio of ≥ 0.2 as positive if the test is performed in their laboratory.

Sera from dogs, horses, cats and cows suspected of having Lyme disease can be sent to:

Animal Diagnostic Laboratory
Department of Pathobiology
Box U-89
Storrs, CN 06208
203-486-2767

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Transfusion AIDS
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where ELISA is performed on dog sera and IFA on the sera of other species. Low titers for Lyme disease (< 1: 160) may be due to cross reactions with Leptospirosis.

In an effort to define the distribution of Lyme disease in Virginia and to identify the arthropod vectors, a cooperative study is presently underway with Old Dominion Univeristy to collect and examine ticks and animal sera for evidence of *B burgdorferi* infection. To aid us in this study we would appreciate having all human and animal cases of Lyme disease reported to the Office of Epidemiology, Virginia Department of Health, (804) 786-6261.

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Reported by Suzanne R. Jenkins, V.M.D., M.P.H., Assistant State Epidemiologist

How Should Ticks Be Removed?

- Use tweezers or forceps. If fingers must be used, use a tissue, paper towel or gloves for protection. Do not handle ticks with bare hands.
- Pull the tick upward using a steady motion to avoid breaking off the mouthparts in the skin. It helps to hold the tick as close to the skin surface as possible and avoid twisting or jerking the tick.
- Try not to crush the tick as its fluids may be infectious.
- Dispose of the tick by flushing it down the toilet.
- After the tick has been removed, wash hands with soap and water.
- Apply antiseptic to the bite site.

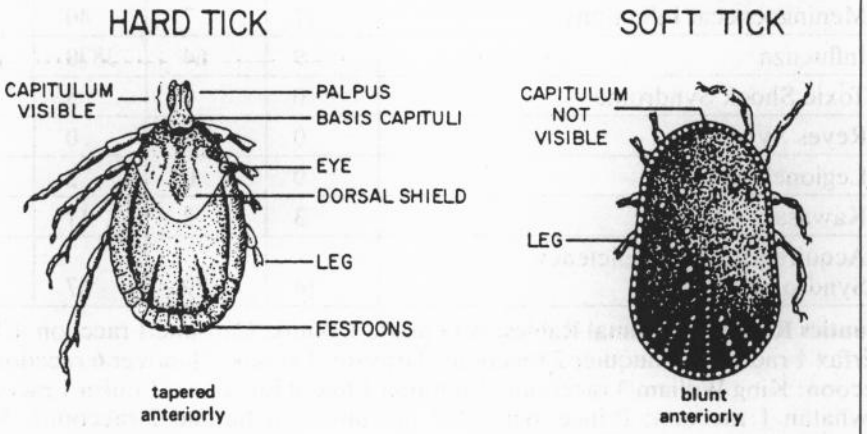

Figure. Generalized Dorsal Views of Female Hard and Soft Tick. There are two main groups of ticks: the hard ticks (Family Ixodidae) and the soft ticks (Family Argasidae). The hard tick is distinguished by a dorsal shield or scutum immediately behind the capitulum (false head). The dorsal shield is small in the female, but in the male it covers the entire dorsal surface. The soft tick has no dorsal shield. Hard ticks also are tapered anteriorly while most soft ticks are blunt. In the United States hard ticks are much more abundant than soft ticks, cause greater annoyance, and are far more important in the transmission of disease to man and animals.

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Cases of selected notifiable diseases, Virginia, for the period April 1, through April 30, 1987

Disease	State					Regions				
	This Month	Last Month	Total to Date 1986	Total to Date 1987	Mean 5 Year To Date	This Month N.W.	This Month N.	This Month S.W.	This Month C.	This Month E.
Measles	0	0	4	0	9	0	0	0	0	0
Mumps	5	3	15	8	16	3	1	0	0	1
Pertussis	3	10	9	32	9	0	0	2	0	1
Rubella	1	0	0	1	2	0	0	0	0	1
Meningitis—Aseptic	14	12	50	52	46	2	3	5	3	1
*Bacterial	22	12	93	64	97	5	0	6	1	10
Hepatitis A (Infectious)	34	28	41	113	53	1	5	20	5	3
B (Serum)	40	26	136	145	165	5	8	9	3	15
Non-A, Non-B	6	5	22	17	31	1	0	0	1	4
Salmonellosis	100	67	289	318	306	10	20	9	42	19
Shigellosis	18	8	18	48	49	12	4	0	2	0
Campylobacter Infections	48	29	104	135	111	14	11	6	11	6
Tuberculosis	29	24	127	112	139	4	7	7	9	2
Syphilis (Primary & Secondary)	19	21	147	81	164	0	3	2	8	6
Gonorrhea	1037	1230	5764	4998	6205	—	—	—	—	—
Rocky Mountain Spotted Fever	0	0	1	0	1	0	0	0	0	0
Rabies in Animals	42	26	69	126	128	7	9	6	10	10
Meningococcal Infections	11	7	40	37	32	2	1	4	0	4
Influenza	9	64	3870	1178	1337	0	0	0	0	9
Toxic Shock Syndrome	0	0	5	0	3	0	0	0	0	0
Reyes Syndrome	0	0	0	0	2	0	0	0	0	0
Legionellosis	0	0	3	2	6	0	0	0	0	0
Kawasaki's Disease	3	2	11	8	11	0	0	0	0	3
Acquired Immunodeficiency Syndrome	14	29	67	69	—	0	6	0	4	4

Counties Reporting Animal Rabies: Albemarle 1 skunk; Caroline 1 raccoon; Chesterfield 1 raccoon; Essex 1 fox, 1 raccoon; Fairfax 1 raccoon; Fauquier 2 raccoons; Grayson 1 skunk; Hanover 6 raccoons; Henrico 1 raccoon; King & Queen 1 fox, 1 raccoon; King William 3 raccoons; Loudoun 1 fox, 4 raccoons; Louisa 1 raccoon; New Kent 1 raccoon; Orange 1 raccoon; Powhatan 1 raccoon; Prince William 3 raccoons; Richmond 2 raccoons; Rockingham 1 skunk; Washington 4 skunks; Westmoreland 1 skunk; Wythe 1 dog.

Occupational Illnesses: Pneumoconioses 50; Carpal tunnel syndrome 26; Asbestosis 16; Hearing loss 13; Silicosis 3; Dermatitis 2; Poisoning, Chemical 1; Mesothelioma 1.

*other than meningococcal

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