THE JOURNAL OF INFECTIOUS DISEASES • VOL. 150, NO. 4 • OCTOBER 1984
 0022-1899/84/5004-0022$01.00

Possible Prevention of Tick-Borne Relapsing Fever in Patients Infected with *Borrelia recurrentis*

Legend. Different treatment courses for travellers highly suspected of being infected with *Borrelia recurrentis*.

Group number	No. of travellers in each group	No. of travellers with tick bite signs (%)	Percentage of travellers with TBRF*	Treatment course
I	15	7(47)	40	Tetracycline after clinical signs
II	14	8(57)	43	
III	16	6(38)	0†	Tetracycline 24–48 hr after being bitten
IV	12	7(58)	0†	

* TBRF = tick-borne relapsing fever. It was diagnosed in travellers who had clinical signs and by serological or microscopic evidence.

† Some of the travellers in Groups III and IV had minor signs of TBRF (headache and low grade fever).

COLLEAGUES—Some areas in the northern part of the Israel desert (Negev) are known to be endemic for *Borrelia recurrentis* infection [1] (tick-borne relapsing fever). Four groups of subjects, aged 18–21 years, had an overnight stay in a few caves along a small valley in this area. The groups camped separately overnight in the same caves within an interval of four weeks. After an overnight stay in the caves, 50% of the individuals in each group found ticks or had signs of tick bites on their bodies. Most actually noted the ticks biting them. Fifteen (52%) of 29 subjects in groups I and II had signs of bites. Four to five days later, 12 of them developed fever (>39 C), rigors, headache, anorexia, nausea, vomiting, and generalized muscular pain. The clinical diagnosis of tick-borne relapsing fever was confirmed by dark-field microscopy of fresh blood samples (12 patients) or serologically (proteus OXK agglutination test) in the three patients in whom spirochete was not identified in the blood. Tetracycline (Tevacycline; Teva Ltd, Jerusalem) [2, 3] was administered in a dose of 2.0 g/day for seven days and all of the patients recovered. Following this experience, 13 (46%) of 28 individuals (groups III and IV) were given tetracycline (1.0 g/day) for three to five days, 24–48 hr after evidence of tick bites. Only two of these 13 subjects developed fever (< 38C) for one day and three had headache for about two days. None of them developed overt symptoms and signs of tick-borne relapsing fever as observed in the subjects from groups I and II. It would appear that a short-term, low-dose course of tetracycline may have prevented the appearance of the disease following a tick bite.

EITHAN GALUN, ELDAD BEN-CHETRIT
Department of Medicine, Hadassah University Hospital, Jerusalem, Israel

Please address requests for reprints to Dr. Eithan Galun, Department of Medicine A, Hadassah University Hospital, Ein Kerem, Jerusalem 91120, Israel

References

1. Dagan R, Gradns D, Milman G, Hammer R, Kaplan H. Relapsing fever in children in the northern Negev. Harefuah 1979;96:234–5
2. Butler T, Jones PK, Wallace CK. *Borrelia recurrentis* infection: single-dose antibiotic regimens and management of the Jarisch-Herxheimer reaction. J Infect Dis 1978,137:573–7
3. Perine PL, Krause DW, Awoke S, McDade JE. Single-dose doxycycline treatment of louse-borne relapsing fever and epidemic typhus. Lancet 1974,2:742–4
4. Khaack RH, Wright LJ, Leithead CS, Kidan TG, Plorde JJ. Penicillin vs. tetracycline in the treatment of louse-borne relapsing fever. Ethiop Med J 1972;10:15–22
5. Butler T, Aikawa M, Habte-Michael A, Wallace C. Phagocytosis of *Borrelia recurrentis* by blood polymorphonuclear leukocytes is enhanced by antibiotic treatment. Infect Immun 1980;28:1009–13

THE JOURNAL OF INFECTIOUS DISEASES • VOL. 150, NO. 4 • OCTOBER 1984
 0022-1899/84/5004-0023$01.00

Leukonychia Partialis in Kawasaki Disease

COLLEAGUES—We wish to call attention to what we believe is a hitherto undescribed association between leukonychia partialis and Kawasaki disease (mucocutaneous lymph node syndrome). Periungual desquamation has been noted in this disease, but abnormalities of nail color have not been reported.

We have recently seen three patients, who met all the criteria suggested in 1982 by the Mucoutaneous Lymph Node Syndrome Research Committee (see table). Examination of the patients' nails showed that most fingernails and some toenails were abnormally white proximally, with a distinct sharp 2–4 mm transverse band of normal pink nail distally. The free edge of the nail was of normal white color and the nails were of normal texture. The color changes persisted for four to seven days.

Leukonychia (white nails) has been divided into four types: total, partial, striate, and punctate. All but the punctate type may be hereditary (autosomal dominant) or acquired. Our patients had nail abnormalities typical for leukonychia partialis of the acquired type, since color changes had not been noted be-

Please address requests for reprints to Dr. Silvia Iosub, Department of Pediatrics, New York Medical College, Lincoln Medical and Mental Health Center, 234 East 149th Street, Bronx, New York 10451

Legend. Findings in patients with Kawasaki disease.

Characteristic	Patient 1	2	3
Age (years)	4	1 10/12	2
Sex	F	M	M
Ethnic group*	H	B	H
Clinical manifestations			
Fever (39.4–40.6 C)	+	+	+
Conjunctival injection	+	+	+
Dry, fissured lips	+	+	+
Strawberry tongue	+	+	+
Generalized rash	+	+	+
Peripheral erythema	+	+	+
Cervical lymphadenopathy	+	+	+
Laboratory findings			
†ESR† (>65 mm/hr)	+	+	+
Thromobocytosis	+	+	+
Nail color abnormalities	+	+	+
Fingers (no.)	10	10	10
Toes (no.)	5	6	5

* H = hispanic, B = black.
† ESR = erythrocyte sedimentation rate.

fore the present illness and were transient. This type of leukonychia has been associated with tuberculosis, arteriosclerosis, nephritis, Hodgkin's disease, chilblains, metastatic carcinoma, anemia, and hepatic cirrhosis [1, 2]. Most researchers agree that it is caused by abnormal keratinization [2–4]. Some [2] postulate that altered vascular patterns of the nailbed or intravascular changes (anemia and hypoproteinemia) may also lead to increased whiteness of the nail. Since our patients were not anemic or hypoproteinemic, we suggest that vasculitis was the cause of leukonychia partialis. Although the heart and coronary arteries are mainly involved in Kawasaki disease, other small and medium-sized arteries may exhibit intimal thickening, round cell infiltration, and, rarely, fibrinoid necrosis [5]. According to Kawasaki et al. [6] an arteritis similar to that seen in infantile periarteritis nodosa and accompanied by coronary thrombosis and aneurysm was found in 13 autopsy cases.

We would welcome correspondence from others who have seen nail color abnormalities in Kawasaki disease.

SILVIA IOSUB, DONALD S. GROMISCH
Department of Pediatrics, New York Medical College, Lincoln Medical and Mental Health Center, New York

References

1. Andrews GC. Diseases of the skin. 7th ed. Philadelphia: W. B. Saunders 1982
2. Albright SD III, Wheeler CE Jr. Leukonychia. Arch Dermatol 1964, **90**:392–9
3. Butterworth T. Leukonychia partialis. Cutis 1982;**29**:363–4
4. Singer PL. Leukonychia. Arch Derm Syph 1931, **24**:112–5
5. Yanagihara R, Todd JK. Acute febrile mucocutaneous lymph node syndrome. Am J Dis Child 1980;**134**:603–14
6. Kawasaki T, Kosaki F, Okawa S, Shigematsu I, Yanagawa H. A new infantile acute mucocutaneous lymph node syndrome (MLNS) prevailing in Japan. Pediatrics 1974;**54**:271–80

THE JOURNAL OF INFECTIOUS DISEASES • VOL. 150, NO. 4 • OCTOBER 1984
 0022-1899/84/5004-0024$01.00

Antigenic Relatedness of Human Enteric Coronavirus Strains to Human Coronavirus OC43: A Preliminary Report

COLLEAGUES – We examined paired sera from 62 infants with acute nonbacterial gastroenteritis and from 50 age-matched controls (admitted to the hospital for nondiarrheal diseases) for antibody to human coronavirus (HCV) OC43 and neonatal-calf diarrhea coronavirus (NCDCV). Antibody response was observed with greater frequency in patients (27.4%) than in controls (2.0%). It was characterized by the presence of neutralizing and often HAI antibody to HCV OC43, but not to the antigenically related NCDCV [1]. These serological data suggested indirectly the existence of a human enteric coronavirus (HECV) antigenically related to HCV OC43, and prompted us to examine both infants and young children with acute gastroenteritis and age-matched controls for detection of antibody to coronavirus in sera and coronavirus-like particles in stools. Coronavirus-like particles were detected by electron microscopy in 34 (16.3%) of 208 patients and in 3 (1.6%) of 182 controls tested ($P < .01$).

Subsequently, we purified HECVs from stools of two patients (VA 24 and VA 35) by sucrose density gradient centrifugation. Antisera from mice and guinea pigs immunized with purified virus were examined by conventional immune electron microscopy (IEM) [2] for reactivity to HCV OC43, NCDCV, and the two HECV strains. Results showed a two-way cross-reactivity between HCV OC43 and the two HECV strains. The antigenic relatedness to HCV OC43, as well as the typical morphology (figure), suggest that the coronavirus-like particles detected were actually HECVs. Furthermore, the buoyant density of HECV-24 and HECV-35 in sucrose was approximately 1.20 g/ml, a value in agreement with those reported for human and animal coronavirus. Convalescent-phase sera from all the patients positive for excretion of coronavirus-like particles in stools, and seronegative for previous HCV OC43 infections, reacted by IEM with HECV-24 and HECV-35 and, to a lesser extent, with HCV OC43. Acute-phase sera from the same patients were poorly reactive or nonreactive by IEM. Conversely,

This work was supported by grant GRT C6/181/124 from the World Health Organization.

Please address requests for reprints to Professor Goiuseppe Gerna, Virus Laboratory, Institute of Infectious Diseases, University of Pavia, 27100 Pavia, Italy.