Failure to Transmit Common Cold to Suckling Hamsters.* (23317)

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Reagan *et al.*(1,2) have reported the successful transmission of the common cold to 6-day-old suckling hamsters by the intranasal instillation of filtered saline nasal and throat washings from individuals with acute coryzal illnesses. Such material from each of 4 donors induced "cold virus signs, such as running nose and wheezing, with the nostrils swollen, boggy and inflamed"(1). Attack rates ranged from 50 to 100%; incubation periods varied from 3 to 7 days(2). The investigators reported that instillation of material from the fourth hamster passage, while inducing typical colds in nonimmune hamsters, failed to do so in animals having recovered from previously induced infections. Instillation of filtered washings from a normal person did not induce signs in control litters. Interest in these results was heightened by information regarding ailments of hamsters provided in several hamster manuals. One devoted a section to "colds in the hamstery," and stated that the common cold "can travel through a hamstery like distemper through a fox or mink yard . . . A first precaution is to abstain from handling hamsters while you yourself have a cold."(3). The manifestations of the infection were described as inactivity, swollen nose, fur ruffled from constant wiping of nasal discharge, sniffling and sneezing.

The present report summarizes experiments undertaken to confirm the above observations, and records the failure of inocula infectious for man to induce disease in suckling hamsters.

Materials and methods. Inocula. The nasal secretions used in Exp. 1 were blown into Petri dishes by 2 donors with acute coryzal illnesses. One secretion (JMR) was diluted 1:5 in maintenance mixture (7.5% chicken serum, 25% tryptose phosphate broth, 67.5% synthetic maintenance fluid) (4) and stored at –70°C for 3 months; the other (WSJ) was diluted 1:2 in tryptose phosphate broth and stored at –70°C for about one year. Prior to use, phenol red was added to the second specimen and the pH adjusted so that it could not be distinguished from maintenance fluid. The inocula used in Exp. 2 were all provided under code by Dr. George G. Jackson. Except for C, Hanks' salt solution, they all were derived from N.S. #142. This secretion was collected by Jackson from a young adult with a coryzal illness on March 6 and 7, 1956, and stored at –70°C until Apr. 20, 1956. On this date it was thawed, diluted 1:10 with Hanks' balanced salt solution containing 5% yeast extract, and passed through a Swinney filter. The filtrate was dispensed into screw cap vials, and stored at –70°C. In 7 experiments between Apr. 1956 and Feb. 1957, Jackson(5) induced colds in 62 of 122 volunteers by intranasal instillation of aliquots of this secretion. On Nov. 30, 1956, 8 days before hamster experiment 2, an aliquot diluted 1:100 produced colds in 4 of 12 volunteers. On Feb. 8, 1957, 2 months after that experiment, another aliquot induced colds in 5 of 15 volunteers. The material used on November 30 was twice filtered, and the unused portion was refrozen and coded as inocula A and B. Inocula coded X and Y were aliquots of the original 1:10 dilution. Inoculum Y was further diluted (final 1:20) in this laboratory with an equal volume of maintenance fluid. Inoculum Z represented material that had been refrozen after use in an experiment in which 50% of the volunteers developed colds. In Exp. 3, a secretion (JHD) was used that had been stored at –70°C for 6 years. On 2 separate occasions in 1950, this

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TABLE I. Attempts to Transmit Common Cold to 6-Day-Old Suckling Hamsters.

Exp. No.	Inoculum		Litter No.	No. in litter	Deaths† No.	Deaths† Day post inoculum
1 11/27/56	Nasal secretion JMR, 9/5/56; 1:5 in maintenance mixture		1	5	0	
			2	5	2	3, 4
			3	7	3	1, 6, 6
	None		4	10	2	5, 8
	Maintenance mixture		5	13	3	All on 8
			6	8	2	8, 9
			7	7	0	
	None		8	6	0	
	Nasal secretion WSJ, 1/4/56; 1:2 in tryptose phosphate broth		9	10	1	10
			10	10	10*	All on 9 and 10
			11	9	9	4 on 7; 5 on 10
	None		12	5	0	
2 12/ 8/56	N.S. #142; 1:100 in Hanks' BSS c 5% yeast extr.; twice filtered; 2 samples	A	13	7	0	
			14	7	0	
		B	15	9	0	
			16	11	0	
	Hanks' BSS	C	17	6	2	1, 1
			18	8	0	
	N.S. #142; 1:20 in Hanks' BSS c 5% yeast extr.	Y	19	7	0	
			20	11	2	12, 12
	Same as "Y" above—heat inactivated	X	21	8	1	1
			22	7	0	
	N.S. #142; 1:100 in Hanks' BSS c 5% yeast extr.	Z	23	6	0	
			24	10	0	
3 1/26/57	Nasal secretion JHD, 2/3/50; 1:10 in milk		25	6	0	
			26	4	0	
	Sterile skim milk		27	7	0	
			28	3	0	
	Maintenance mixture		29	4	2	1, 4
			30	7	0	
	Nasal secretion CF, 12/7/56; in maintenance mixture		31	8	0	
			32	6	0	

* Mother tunneled under barrier and deserted litter on day 9.
† None of these hamsters had nasal signs.

secretion, diluted 1:10 in skim milk, had induced colds in 50% of volunteers. The other secretion (CF), from an individual with a moderately severe cold, was collected on nasal swabs, placed in 2 ml of maintenance fluid and stored at –70°C for 7 weeks prior to use. *Hamsters.* The litters were shipped by dealer 2 days after delivery, and received in the laboratory on the fourth day. The mothers and sucklings were left in the same 9½ x 12¾ in. fruit can in which they had been shipped. In Exp. 1, there were 2 litters in each can separated by a solid partition. In Exp. 2 and 3, there was 1 litter per can. After coding, the inocula were dropped on the noses of 6-day-old unanesthetized sucklings from a No. 26 or 27 gauge needle, approximately 0.03 ml/suckling. In most instances, the 3-4 small drops were inhaled by the hamster. The animals were then observed daily for development of nasal signs.

Results. Table I shows the details of the 3 experiments. In all, 138 suckling hamsters in 18 litters were given potentially infectious materials. Five (A, B, Y, Z, JHD) of the 8 inocula had induced colds in human volunteers. Control inocula were given to 78 hamsters in 11 litters. Twenty-one sucklings in 3 litters were not inoculated. None of the hamsters developed nasal signs or obvious respira-

tory symptoms during 10 to 12 days of observation. Deaths occurred in both the infected and control litters. The majority of deaths occurred during the first experiment when the animals were housed in crowded quarters and the bedding was allowed to become wet. In one instance (litter No. 10) the mother deserted the sucklings. Avoidance of crowding in Exp. 2 and 3 limited nonspecific deaths to the runts of the litters. None of the animals exhibited swollen nostrils, coryza, wheezing, or ruffled fur.

Discussion. The inocula used in these experiments had been stored at −70°C for varying periods of time, introducing a consideration of the stability of infectivity of the common cold virus at this temperature. Andrewes(6) found that filtrates of nasal secretions suffered no loss of infectivity when so stored for 2 years. Feller *et al.*(7) induced colds in volunteers with material that had been stored for 16 months. With 5 different secretions, Jackson(5) noted no loss of infectivity during periods of storage of from 40 to 49 weeks. While parallel transmission experiments were not done simultaneously in both humans and hamsters, these considerations plus the evidence regarding the infectiousness for humans of N.S. #142 both before and after experiment 2, justify the conclusion that the negative results reported here are valid.

Summary. Nasal secretions from 5 different individuals with coryzal illnesses were inoculated intranasally in 138 suckling hamsters. No evidence was obtained to indicate that human colds can be transmitted to suckling hamsters.

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Blood Levels of 17-Hydroxycorticosteroids (17-OHCS) During Labor of Human Pregnancy.* (23318)

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It is now generally accepted that the activity of the adrenal cortex is increased in pregnancy(1-8). Blood levels of 17-OHCS have been found to increase progressively throughout the course of gestation reaching its maximum at the end of gestation and returning to low levels one week after delivery (2,3). These levels were higher in the primipara than in the multipara and equally higher in patients having vaginal deliveries than in patients undergoing Cesarean section(3,9,10). These differences were attributed to the stress of labor which is more severe in primipara and during vaginal deliveries. This assumption received support from observations of high plasma levels of these hormones at the time of umbilical cord ligation(11).

The present study was aimed at assessing the effects of the various stages of labor and delivery on blood levels of 17-OHCS. This was done by following the same group of patients throughout labor until approximately one week after delivery.

Material and methods. Thirty-four pregnant subjects whose antenatal courses had

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