

lation into the surrounding tissues where it becomes destroyed by the alkalinity of the tissue fluid. Subcutaneous injection of adrenin produces only a slight effect upon the blood pressure. As is well known the bloodvessels of the rabbit's ears are easily visible. We have observed that a subcutaneous injection of adrenin into the lower part of one of the rabbit's ears causes a striking and long lasting constriction of the bloodvessels of the corresponding ear. It is this phenomenon which we wish to demonstrate. If the injection is given in the proximity of the central artery, the constriction of the bloodvessels of the entire ear sets in two or three minutes after the injection. If it is given at some distance from the central artery, the pallor develops slowly. In either case the vessels remain more or less strikingly constricted for many hours, sometimes even seven hours. Injection of a different solution, saline, for instance, does not exert such an effect. It is evident that in the case of the ear the adrenin is not destroyed rapidly by the tissues surrounding the bloodvessels.

35 (1213)

Colostrum blood-serum therapy.

By **CHARLES B. FITZPATRICK.**

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My observations on natural antibodies and healing substances in milk¹ led me to study the transmission of antitoxines in colostrum. Some buck kids were fed from birth until they were about one month old on the colostrum milk which their mothers gave after delivery. The blood-serum of these young goats was utilized for this study.

The ingestion of the colostrum of goats by man has disagreeable results. The greatest amount of the immunizing substances both natural and artificial which pass from the nursing mother to the blood-serum of the infant, however, is transmitted by the colo-

¹ "The Utilization of 'Reactor' Milk in Tubercle-Medicine," *Proc. Soc. Experimental Biology and Medicine*, 1915, xiii, pp. 35-37.

strum. Antitoxine taken in milk by infants appears to a large extent in their blood-serum. I reasoned that the administration of the blood-serum of these goat kids, obtained from them shortly after they had taken the colostrum, would be beneficial to infants in need of natural antibodies to overcome the hereditary dystrophy of children born of tuberculous mothers. This blood-serum I have here referred to as colostral blood-serum.

Tests of this serum were then made, and it was found to be harmless. Thirty to sixty c.c. of this colostral blood-serum were given every two to four days over a period of two weeks. These doses, each of which had been mixed with a pint of goat's milk, were fed to a scrofulous infant two months old, with a prognosis of extreme gravity. This infant was born of a tuberculous mother. The results indicated undoubtedly a marked benefit. A striking improvement took place during the two weeks following the ingestion of this blood-serum and continued thereafter, until the infant appeared to be about normal. The first dose consisted of 30 c.c. of the colostral blood-serum, used in two days, the second, of 60 c.c. fed in two days, the third of 60 c.c. in four days, the fourth of 50 c.c. in four days, and the fifth of 50 c.c. in two or three days. A total of 250 c.c. was given in about two weeks. This infant was on goat's milk from directly after birth, but did not definitely improve until after the colostral blood-serum had been employed.

The colostral blood-serum, in order to be effective in older infants, when the intestinal wall has become more impervious, and in adults, must most probably be injected, subcutaneously, intravenously or subdurally. Direct absorption of protein may, however, occur late where the condition of the alimentary canal is abnormal. Although the result was obtained in a scrofulous infant, this practical method of obtaining natural and artificial antibodies gives promise of being effective in syphilis and other diseases influenced by antibodies.

We must, besides the antibody aspect, also take the activation concept of colostrum into consideration. The mother of this infant did not furnish it with colostrum. It may well be since constituents of ingested colostrum, especially proteins, pass into the blood-serum, that by this technique we have found a way of using these important constituents and the functions of colostrum. This

method of employing the blood-serum of the colostrum-fed, furthermore, does not cause colostration.

36 (1214)

Abnormalities in the Q R S group of the electrocardiogram associated with myocardial involvement. (Preliminary report.)

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We have noted the association of definite peculiarities in the electrocardiogram, indicative of disturbed intraventricular conduction, with such clinical conditions as are usually accompanied by myocardial involvement.

The normal electrocardiogram is to be considered the result of the passage of an impulse at a normal velocity through the usual channels, *i. e.*, node of Tawara, main stem, bundle branches and arborizations which consist of the so-called Purkinje fibers. The latter form a network covering practically the entire endocardial surface of the ventricles. The velocity of the impulse through Purkinje fibers is at least ten times faster than its rate through ordinary ventricular musculature. The impulse reaches the ventricle normally through the Purkinje fibers, stimulating the ventricular walls practically as a whole. An experimental injury to the Purkinje fibers delays the propagation of the impulse. A lesion only partially involving either bundle branch or an extensive lesion of the arborizations of a branch would cause a delay in the transmission of the excitation wave over the area supplied or damaged. An experimental block of either right or left main branch completely interrupts the passage of the impulse over normal channels to the corresponding ventricle, the spread then occurring through ordinary muscular connections. This gives a characteristic electrocardiogram differing in many respects from those to be described here which we believe to be intermediate forms between the normal and those due to bundle branch block. It is possible that some of the clinical records interpreted as bundle