GROUP DIFFERENCES IN CONTENT OF EMBRYO-SPECIFIC GLOBULINS IN FETAL DOG SERA

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The group to which a fetal dog serum belongs is determined by the presence or absence of embryo-specific α_2- and α_4-globulins. Embryo-specific α_3-globulins were found in all fetal dog sera studied.

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According to the writer's earlier investigations [1, 2], the globulins of fetal dog sera include up to 3 embryo-specific antigens identified as embryo-specific α_2-, α_3-, and α_4-globulins (ESA_2-, ESA_3-, and ESA_4-globulins). It was therefore decided to investigate the group affiliation of fetal dog sera by relation to the number of embryo-specific components contained, corresponding to the accepted classification for human fetal sera [3, 4, 7].

The group affiliation of the sera was determined for dog fetuses at the 4th-8th week of development, on the basis of a study of the three embryo-specific globulins.

EXPERIMENTAL METHOD

Antisera against embryo-specific globulins were obtained by immunizing rabbits with mixed fetal dogs' sera or with individual fractions of serum isolated by electrophoresis in agar gel. The resulting antisera were exhausted with serum from adult dogs. Antisera reacting after exhaustion specifically with either ESA_2-, ESA_3-, or ESA_4-globulins were used. The embryo-specific components were identified by immunoelectrophoretic analysis [5] and by double diffusion with a standard test system [6].

EXPERIMENTAL RESULTS

As Table 1 shows, ESA_3-globulin is a constant component of all fetal sera, whereas ESA_4-globulin was found in the serum of 83% of fetuses and ESA_2-globulin in 12.5% of cases.

TABLE 1. Frequency of Detection of Embryo-Specific Globulins in Fetal Dog Sera

Embryo-specific globulins	No. of sera investigated	Frequency of detection	
		abs.	%
α_2	64	8	12,5
α_3	64	64	100
α_4	64	53	83

TABLE 2. Group Characteristics of Fetal Dog Sera Based on Embryo-Specific Globulins

Group	Presence of embryo-specific globulin			No. of sera tested	Frequency of detection	
	α_2	α_3	α_4		abs.	%
1-я	+	+	+	64	6	9,3
2-я	+	+	—	64	2	3,0
3-я	—	+	+	64	47	73,7
4-я	—	+	—	64	9	14,0

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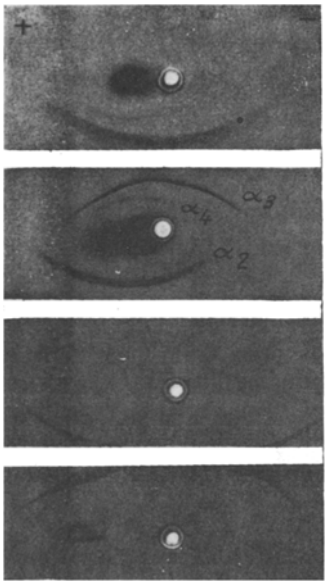

Fig. 1. Immunoelectrophoretic characteristics of group differences between fetal dog sera based on embryo-specific globulins. Wells contain fetal dog sera; gutters contain antisera against dog embryo-specific globulins; α_2, α_3, α_4-embryo-specific globulins.

In accordance with the results obtained, four individual groups could be identified among the fetal dog sera (Fig. 1).

Sera of group 3 (Table 2), containing ESA_3- and ESA_4-globulins, were found most frequently (73.7%) among the fetuses, and group 2, containing ESA_2- and ESA_3-globulins, least commonly (3%), while the incidence of groups 1 and 4 was about equal (9.3 and 14%).

By contrast with human fetal sera, which can be subdivided on the basis of the three embryo-specific globulins into eight individual groups [3, 4, 7], fetal dog sera could be subdivided into only four groups. The decrease in number of possible groups in dog fetuses can be explained by the constant presence of ESA_3-globulins, whereas the most widespread component of human fetal serum (ESA_1-globulin) is found in only 95.4% of cases.

Whereas the group containing all three embryo-specific globulins is found most frequently among human fetal sera (46.4%), the corresponding group in dogs is much less widespread (9.3%).

Just as in human fetuses, group differences arising in the early stages of embryonic development of the dog persist until birth.

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