IMMUNIZATION DURING PREGNANCY TO THE KIDD (Jk^a) RED-CELL ANTIGEN

BY

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The production of anti-Jk^a as a result of pregnancy is rare. Simmons, Graydon, Jakobowicz, Santamaria, and Garson (1957) have reviewed the literature and described a case of their own. This note reports the finding of a further example of the antibody produced in this way, and demonstrates the importance of using suitable anti-globulin sera in compatibility tests.

Case Report

During her first pregnancy, Mrs. H. was found to be group O, rhesus negative, and her serum was free from immune antibodies; none were detected 10 days after delivery. The techniques used would have detected anti-Jk^a if this had been present. During her second pregnancy the only investigations of her blood were carried out 10 days before delivery. The sample submitted was too small for a full investigation, and on the limited amount of serum available we detected anti-D and anti-C active in saline and albumin. The serum was not tested by the indirect antiglobulin test against known rhesus-negative cells. As Mrs. H. had never been transfused the possibility of yet a third antibody was not considered.

She was delivered of a group O rhesus-positive child. The direct antiglobulin test was positive, and the haematological and clinical findings indicated that transfusion was necessary. Group O, rhesus-negative donor blood was matched against the mother's serum by saline, albumin, and antiglobulin techniques, and the cells of one donor were found incompatible by the antiglobulin technique. Other donors were compatible, and the baby was treated and progressed well. The blood samples of the parents and their baby were submitted for further investigation.

Further Serological Investigations

Red cells.—Mrs. H.: O, MNS, P₁-ve, cde/cde, kk, Le(a+b-), Lu(a-), Fy(a+), Jk(a-), Wr(a-). Mr. H.: A₁, M_sN_s, P₁-ve, CDe/cde, kk, Le(a-b+), Lu(a+), Fy(a-), Jk(a+), Wr(a-). Baby H.: O, CDe/cde, direct antiglobulin test positive. (Examined at a later date and found to be Jk(a+) when the antiglobulin test was negative.)

Serum.—The presence of anti-D and anti-C active in saline and albumin was confirmed, and examination against a panel of cde/cde cells suggested that the serum contained the immune antibody anti-Jk^a active by the antiglobulin technique, but completely inactive in saline and albumin media (see Table).

		Rhesus-negative Cells		
		Jk(a+)	Jk(a-)	
Mrs. H.'s serum	Positive	13	0	$P = \frac{1}{8568}$
	Negative	0	5	

Further examination of the anti-Jk^a showed it active with ficinized cells, weakly active with trypsinized cells, but completely inactive with papainized cells. Where enzyme-

treated cells did react the degree of reaction was not as great as in the antiglobulin test.

As anti-Jk^a has been reported (Stratton, 1956) as occurring in the non-gamma-globulin fraction, Mrs. H.'s serum was further examined. To anti-human-globulin serum was added a solution of gamma-globulin (1 in 50) so that the serum would no longer agglutinate rhesus-positive cells coated with incomplete anti-D. With this prepared anti-human-globulin serum it was possible to demonstrate that this anti-Jk^a was not a gamma-globulin. Prepared anti-human-gamma-globulin showed Mrs. H.'s anti-D and anti-C to be a gamma-globulin. Tests with a series of commercially available anti-human-globulin sera used at the dilutions recommended by the manufacturers were most unreliable for detecting the anti-Jk^a. Some of these reagents were reliable only for detecting gamma-globulin-type antibodies.

In all the tests the serum had complement present, or this was added to it as fresh human serum, as it was found that the reactions were stronger with complement than without.

Summary and Conclusions

A case is reported in which anti-Jk^a was present as well as the rhesus antibodies anti-C and anti-D. The only stimulus was pregnancy.

The anti-Jk^a was in the non-gamma fraction, and, unless the anti-globulin serum used had antibodies against globulins other than gamma-globulins, the anti-Jk^a could not be detected.

The presence of complement enhanced the reactions of the antibody. Similar experiences have been found with anti-K, anti-Le^a, and anti-Fy^a, and demonstrate the importance of using fresh serum for compatibility tests and of using antiglobulin serum capable of detecting the non-gamma-globulin-type antibodies.

REFERENCES

- Simmons, R. T., Graydon, J. J., Jakobowicz, R., Santamaria, J., and Garson, M. (1957). *Med. J. Aust.*, 2, 933.
Stratton, F. (1956). *Vox Sang. (Basel)*, 1, 160.

EIGHT FURTHER CASES OF RADIATION-INDUCED CANCER

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In 1902, six years after the discovery of x rays, the first report of a radiation-induced cancer appeared in the literature (Friebe, 1902). It concerned an x-ray technician who developed a squamous-celled carcinoma on the dorsum of the hand.

At first, radiation-induced carcinoma was seen only in x-ray or radium workers, but in recent years most cases have occurred in patients who have had radiotherapy for malignant or benign conditions, and especially the latter. This is so because these patients live long enough to allow malignant change to take place; young developing tissue seems more susceptible to the carcinogenic effect of ionizing radiation (Clark, 1955), and the method often used in treating those conditions, by protracted multiple exposures, is accepted as the most potent method of inducing radiation carcinoma. Thyrotoxicosis was one of the conditions treated in this fashion (Barclay and Fellows, 1927).

Other benign conditions commonly treated by radiotherapy were haemangiomas, psoriasis, prurigo, pruritus, and lupus vulgaris.