

are regarded, nowadays, by the majority of cardiologists as a little suggestive of congenital heart disease; Roesler and Kiss (1931) have drawn attention to the frequency with which diphasic QRS complexes occur in cases of congenital heart disease. According to Brown, exaggerated or large P waves are observed in about 20 per cent of cases of congenital heart disease, and occur with special frequency in the cyanotic group of cases, in which auricular hypertrophy is common. Increase in the duration of P-R prolongation of the auriculo-ventricular conduction time is said to weigh in favour of a diagnosis of inter-ventricular septal defect provided that the possibility of active rheumatism is properly ruled out (Brown, 1939). Inversion of the P waves in leads II and III (as in this case) has been recorded previously, in cases of congenital heart disease, on rare occasions.

Summary

The case, reported here, of multiple developmental defects of the heart, is unique in that it presents a most unusual combination or association of heart lesions: (1) a complete transposition of all the viscera, with the 'mirror-image' type of dextrocardia, (2) Fallot's tetralogy (which includes besides stenosis or atresia of the pulmonary artery, an inter-ventricular septal defect, dextro-position of the aorta and hypertrophy of the right ventricle) and (3) a partial or first degree heart block, with an increased P-R duration of 0.32 second. Other features of interest in this case are: (1) the inversion of P waves in all the limb leads of the electrocardiogram, (2) the lack of concavity of the cardiac silhouette in the region of the pulmonary arc, and (3) the extensive audibility of the systolic murmur, which could be distinctly heard all over the chest.

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EVALUATION OF GRUSKIN'S INTRADERMAL TEST FOR PREGNANCY

By V. R. NAIDU, M.B., B.S., M.S., M.R.C.P. (Lond.),
D.T.M. & H. (Eng.)

and

C. D'SOUZA, B.S.C., M.B., B.S.

Department of Pathology, Medical College, Mysore

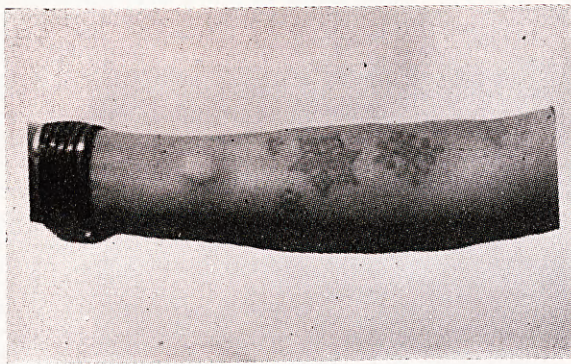
THE need for a satisfactory test for pregnancy has long been felt, and numerous tests have been evolved for this purpose. A few of these may be mentioned.

The Aschheim-Zondek (1928) test or its modifications depend on the demonstration of the anterior-pituitary-like hormone in the urine of pregnant women. Though this is widely accepted as the most accurate and certain test, it has several disadvantages, in that it is expensive, complicated, and entails the maintenance and use of test animals. (In the Aschheim-Zondek test, white mice are used, and in the Friedman (1929) modification, rabbits are used as test animals.) In the Bitterling test, (Gottlieb, 1936) standard Japanese Bitterling fish are used. The fish are placed in a bowl containing a known quantity of water and pregnant urine, and observations are made at 24-hour intervals. In positive cases there is enlargement and lengthening of the ovipositor. This test is again complicated and entails the maintenance of the standard type of fish.

The detection of histidine (Vanrell and Miserachs, 1935) in the urine of pregnant women as a possible method of diagnosis has been commented on by several workers.

The need for a simple, inexpensive test is apparent. Of the intradermal tests, the test of Benjamin Gruskin (1936), subsequently confirmed by E. Schwartz (1936) and G. Pangalos (1939), deserves attention. Gruskin based his test on previous work done by himself (1929, 1932, 1933) concerning the nature of homologous proteins producing an allergic reaction with the formation of weals with 'pseudopodia' when injected intradermally in cases of malignancy. He applied the same principle to the diagnosis of pregnancy, utilizing placental tissue as antigen, which when injected intradermally produced weals with pseudopod formation at the site of injection in pregnant women. Pseudopods did not appear when there was no pregnancy. It has been proved that this reaction is due entirely to the allergic response on the part of the individual to an homologous protein. The test is positive during menstruation on account of the decidual involvement of that process which will respond to the homologous protein of the placental extract. Gruskin also found that this test, like the Aschheim-Zondek test, gave positive results in teratomas on account of the fetal character of this type of tumour.

The intradermal test discussed in this paper is a continuation of the experimental work done



Photograph of a weal produced by intradermal injection of antigen. Note the wavy outline owing to the formation of 'pseudopods'.

TRAUMATIC CEREBRAL HERNIA : HALDER. M.H.P. (PAGE 224)



by Gruskin, and the placental antigen used in our cases was prepared by us in the Pathology Laboratory of the Medical College, Mysore, according to the method outlined by Gruskin.

Technique of test

The skin over the volar aspect of the forearm is cleaned with alcohol and dried lightly with sterile gauze.

One-tenth of a cubic centimetre of antigen is injected intradermally with a tuberculin syringe using a fine needle (27 gauge).

In every case as a control we injected a similar dose of physiologic saline solution. The control injection may be done on the same forearm a little distance away from the site of injection of the antigen, or on the opposite forearm. A different syringe is used.

A weal is formed at the site of injection of the antigen. It must be perfectly round and have the appearance of 'orange peel' or 'pig skin' due to the hair follicles. This characteristic appearance of the weal assures one that the antigen has been injected intradermally. In positive cases, a small areola of inflammation and pseudopods appears within 10 minutes (see photograph, plate X).

In negative cases no such reaction takes place, and the weal remains unaltered.

The saline control test must always be negative and show no inflammation or pseudopod formation. The injection should not be forced. If this precaution is not taken, the value of the test is negatived by the appearance of false pseudopods.

Fallacies

(1) As already stated the test is positive during menstruation.

(2) False positive results may occur if the injection is forced.

(3) If the saline control shows pseudopod formation, it can be inferred that the patient's skin is hypersensitive and is not suitable for the test.

Preparation of antigen

Fresh placentas are necessary for preparation of the antigen. They must be obtained as soon as possible after delivery, thereby avoiding any change which might take place by disintegration of the proteins.

(1) Placentas are carefully washed, and freed as thoroughly as possible from traces of blood and blood clots.

(2) They are cut up into small bits, minced in a fine mincing machine, and finally ground into pulp in a mortar.

(3) The pulp is placed for 24 hours in three times its volume of acetone.

(4) The acetone is poured off and the tissue allowed to dry. It must be rendered free from traces of acetone, by evaporation.

(5) It is then extracted with deci-normal sodium hydroxide solution for 24 hours. In this step the tissue will have completely disintegrated

and gone into solution, which will be highly alkaline in reaction.

(6) It is now neutralized with a buffer solution of the following composition: 0.05 normal hydrochloric acid + 2.27 gm. potassium dihydrogen phosphate per litre of the solution.

The antigen must be brought to a pH of 6.9. This is done by taking 10 c.cm. of the solution and adding the buffer drop by drop till the colour matches with that of a standard coloured solution of pH 6.9 in a colorimeter. The total quantity of buffer now needed is thus easily estimated.

(7) A preservative must be added to the antigen. This is made by mixing two parts of glycerine with one part of merthiolate. Six drops of this mixture are added for every 10 c.cm. of the antigen.

(8) The antigen is placed in sterile pyrex flasks (ordinary glass gives up alkalis and changes the pH), the mouths being plugged with sterile cotton-wool.

Results

The following were the results of the test done on 126 cases, the saline control tests being negative in every case.

Type of cases	Number of cases	Results
1. Male students of the III and IV Year M.B., B.S., and male attenders in Pathology Laboratory ..	26	Negative.
2. Amenorrhœa due to causes other than pregnancy :—		
(i) Amenorrhœa, 1 year's duration ..	1	Negative.
(ii) Amenorrhœa, 2 months' duration ..	1	Negative.
(iii) Amenorrhœa, 1½ months' duration ..	1	Negative.
3. Menstruating women ..	3	Positive.
4. Missed abortion, term 3½ months ..	1	Positive.
Missed abortion, term 4 months ..	1	Positive.
5. Pelvic cellulitis (case delivered 3 months prior to test) ..	1	Negative.
6. Ectopic pregnancy ..	1	Positive.
7. Pregnant women :—		
(i) Term 2 months ..	6	Positive.
(ii) Term 2½ months ..	2	Positive.
(iii) Term 3 months ..	8	Positive.
(iv) Term 3½ months ..	1	Positive.
(v) Term 4 months ..	5	Positive.
(vi) Term 4½ months ..	3	Positive.
(vii) Term 5 months ..	7	Positive.
(viii) Term 6 months ..	11	Positive.
(ix) Term 6½ months ..	3	Positive.
(x) Term 7 months ..	4	Positive.
(xi) Term 7½ months ..	4	Positive.
(xii) Term 8 months ..	12	Positive.
(xiii) Term 8½ months ..	4	Positive.
(xiv) Term 9 months ..	18	Positive.
(xv) Term 9½ months ..	2	Positive.
TOTAL ..	90	All positive.

In this series five had a Friedman's control test along with the intradermal test and the results agreed. In our experience, correct interpretation of the results depended upon a rigid observance of the technique of intradermal injection, the use of a saline control for every case, and the frequent checking and maintenance of the pH of the antigen at 6.9.

Discussion

The intradermal test has several noteworthy features which make worth while its practical application for the diagnosis of pregnancy. These are the inexpensiveness and simplicity of the test, the rapidity with which diagnosis can be made, and lastly the high degree of accuracy of results.

(1) When compared with other standard tests such as the Aschheim-Zondek and Friedman and Bitterling tests, the intradermal test is relatively inexpensive. It does not entail the maintenance of test animals such as guinea-pigs, rabbits or fish. The placental antigen can be easily prepared and stored according to the method outlined by Gruskin. It is one of the cheapest tests. The technique of the test is extremely simple, and one need not go through the ritual of injecting animals and sacrificing them a few days later as in the other tests.

(2) Diagnosis can be made within 10 minutes of the intradermal injection. This rapidity of diagnosis is of the greatest value in conditions such as ectopic pregnancy, especially when a differentiation has to be made between emergency conditions such as ruptured tubal pregnancy and any other acute abdominal catastrophe.

(3) Regarding the accuracy of the test, we have had correct results in all our cases; but we wish to emphasize that the fallacies should be borne in mind. Erroneous results are avoided by adhering to the proper technique.

Conclusion

(i) A series of 126 cases was tested with Gruskin's intradermal test of which 26 were controls.

(ii) The tests were done according to the technique described, and were found to be as sensitive as any of the Aschheim-Zondek modifications.

(iii) The utility of test is in (a) its simplicity of performance, (b) the rapidity of diagnosis, and (c) the high percentage of accuracy.

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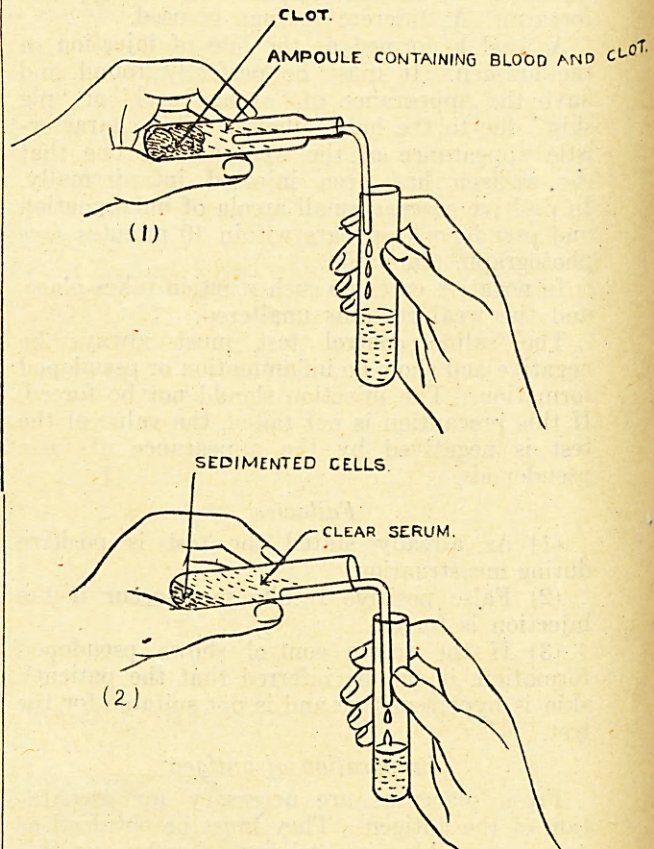
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A SIMPLE ARRANGEMENT FOR TRANSFERRING BLOOD AND SERUM FROM CAPSULES INTO TUBES FOR SEROLOGICAL TESTS WITHOUT THE USE OF PIPETTES

By N. SESHADRINATHAN, M.B., B.S., D.T.M.
 (From the King Institute of Preventive Medicine, Guindy, Madras)

Blood samples are usually sent to the laboratory in glass ampoules. On arrival at the laboratory, after being recorded and numbered, the serum mixed with the blood cells is transferred from each ampoule to testing tubes usually by pipetting off with Wright's pipettes. When a



- (1) A simple method of transferring blood from blood capsules arriving at the laboratory for serological tests.
 (2) Clear serum after centrifugalization of the blood serum mixture.

large number of samples have to be handled, this process is tiresome and takes a lot of time. A large number of pipettes have to be used. Washing is usually a messy process, and very

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