

diagnosis in every case showing the above syndrome.

SUMMARY

1. Diffuse myelofibrosis as a clinical and pathological entity has been described and a typical case has been presented.

2. A case of diffuse lymphosarcoma which gave a similar clinical picture has been presented.

3. The clinical syndrome of pain in the long bones and fever associated with a leuko-erythroblastic anæmia, enlargement of the lymph glands, liver and spleen is due to replacement of the hæmatopoietic bone marrow.

4. No specific treatment is known.

5. The importance of a bone marrow biopsy to confirm the exact diagnosis is emphasized.

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DEVELOPMENT OF AN ANASTOMOSIS BETWEEN THE CORONARY VESSELS AND A TRANSPLANTED INTERNAL MAMMARY ARTERY*

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DURING the past twenty-five years many attempts have been made to increase impaired coronary circulation. Numerous operative procedures have been devised. Most of these basically consist of suturing a vascular structure to the ventricle wall. Beck in 1935 sutured the pectoral muscle to the left ventricle and O'Shaughnessy in 1937 grafted the great omentum on to the left ventricle. More recently, 1940, Fauteux attempted to improve ventricular wall circulation by ligation of the vena magna cordis.

The problem has been approached by transplanting the left internal mammary artery directly into the left ventricular wall.

METHOD

Basically the method described below for the development of an extra coronary circulation consists of transplanting the internal mammary artery directly into the left ventricular wall. This was done in dogs in three different ways designated as experiments types A, B, C.

Experiment type "A" (6 dogs).—The internal mammary artery is tied at its distal end between two ligatures and cut. The free end is drawn through a previously prepared tunnel in the wall of the left ventricle and fixed in this position.

Experiment type "B" (7 dogs).—The internal mammary artery is not cut but freed from its bed in its central portion. A slit is made in the wall of the left ventricle and the artery slung into the wound where it is held by a free pleural graft or by sutures.

Experiment type "C".—The left coronary sinus and anterior descending branch of the left coronary artery are tied. The internal mammary artery is sutured into the wall of the ventricle as in Experiment "B".

I do not know what I may appear to the world; but to myself I seem to have been only a boy playing on the seashore, and diverting myself in now and then finding a smooth pebble or a prettier shell than ordinary whilst the great ocean of truth lay all undiscovered before me.—Isaac Newton.

* This work was assisted by a grant-in-aid from the Division of Medical Research of the National Research Council, and was done in the Department of Physiology, McGill University, and in the Department of Surgery, Royal Victoria Hospital, Montreal.

RESULTS

Experiment type B.—Six animals of experiment type "B" have been autopsied. None showed the development of a collateral circulation. The internal mammary artery was found to have its lumen completely occluded by fibrous tissue. This occurred only at the site of transplantation into the wall of the left ventricle. The lumen of the artery proximally and distally to the site of transplantation remained patent.

Experiment type C.—In this group no animals have as yet been autopsied.

Experiment type A.—Dogs in this group were sacrificed at different periods, in which equivocal results were obtained but in the last of these there appeared to be a definite anastomosis. Details of this dog are herewith reported.

Dog. No. 8 operated upon February 8, 1946. Killed June 14, 1946. The dog was bled to death and the internal mammary artery injected with pink Schlesinger's solution (fluid). The injection was done with the heart *in situ* and with the internal mammary artery dissected from the chest wall but still attached to the left

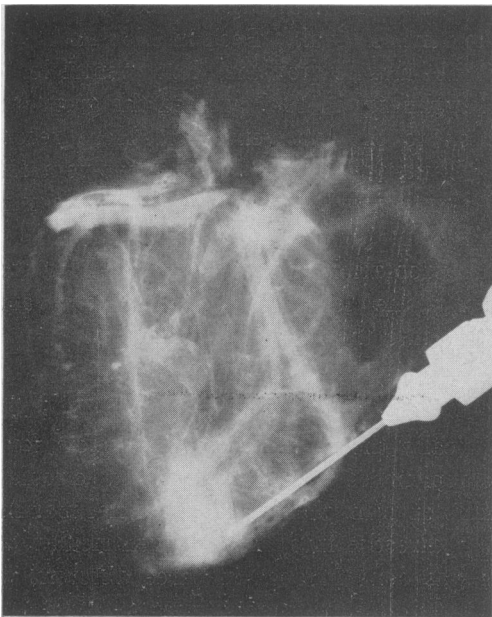


Fig. 1.—X-ray showing radio-opaque solution filling the left coronary system after injection into the transplanted left internal mammary artery.

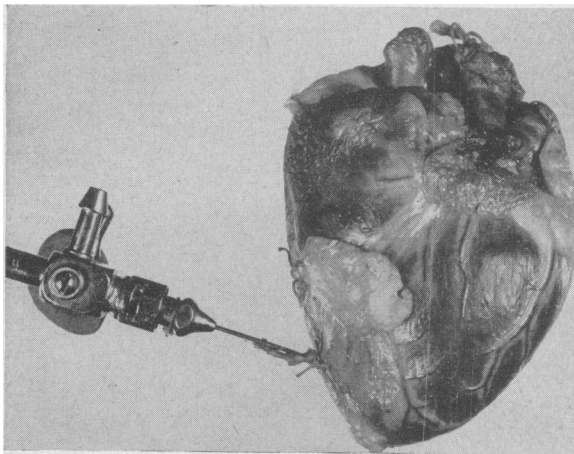


Fig. 2.—Photograph of heart after injection of the transplanted internal mammary artery. Note that the vessels of the left ventricle are turgid and full of the injection fluid, whereas the vessels of the right ventricle are empty and collapsed.

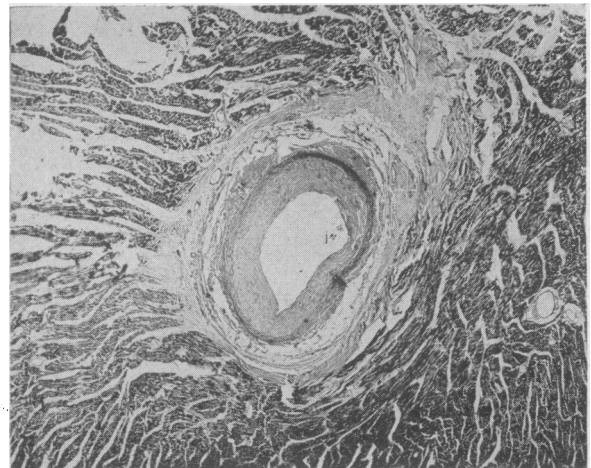


Fig. 3.—Low-power view of microscopical section taken through the ventricular wall at site of internal mammary transplantation. Note patent internal mammary artery lying within ventricular muscle with only moderate thickening of intimal walls.

ventricle. As the injection progressed, the pink Schlesinger's solution could be traced flowing through the ramifications of the left coronary artery. The flow was from apex to base. A large quantity of solution was injected without distending the vessels. Upon removing the heart from the chest, it was found that the left ventricle and aorta contained the injected solution. The injected solution obviously reached the aorta through the coronary orifice. In order to keep the radio-opaque injected fluid within the coronary vessels, it was necessary to tie off the left coronary artery at the sinus of Valsalva. The accompanying figures show the distribution of the injection fluid and a section of the internal mammary artery lying in the wall of the left ventricle. It will be noted that the artery is patent and that there is only moderate fibrous intimal thickening. The manner of anastomosis between the two vessels, it is hoped, will be demonstrated microscopically by serial sections which are now in the process of being made.

DISCUSSION

This preliminary report is published in order to record the fact that the internal mammary artery when transplanted into the left ventricle of the heart according to the technique described, develops anastomotic channels with the left coronary circulation after an adequate period of time. This fact has been demonstrated by the free flow of injection fluid from the cannulated internal mammary artery into the branches of the left coronary artery. It is recognized that the manner of the development of these anastomoses is not clarified in this report. Further studies by injection and serial sections are now being conducted.

CONCLUSION

The left internal mammary artery when transplanted into the wall of the left ventricle formed an anastomosis with the left coronary artery system after four months.

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CYSTS OF THE GENITAL DUCTS,
MÜLLERIAN AND WOLFFIAN

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IT is generally agreed that congenital anomalies are common in the genito-urinary system, yet very little can be found in the literature about cysts of the genital ducts. We have recently encountered three such cases on our service, and because of their unusual interest we are reporting them.

Retrovesical and subtrigonal cysts in the male are classified as Müllerian duct cysts. They are all remnants of the Müllerian duct which opens into the utricle of the prostate, and therefore occur only in the male. One subtrigonal cyst in our series occurred in a female, and from an embryological standpoint must be categorized as a Wolffian duct cyst. Clinically the cysts in the male simulate

vesical obstruction; in the female, bladder symptoms and persistent pyuria.

CASE 1

A.B., male, aged 9 years: admitted April 28, 1941, with the following symptoms. Vomiting, abdominal pain, dysuria, difficulty in voiding, fever and rapid pulse. Physical examination essentially normal. Intravenous pyelography showed marked hydronephrosis and hydroureter, left. Non-functioning right kidney. At cystoscopy there was a large round mass on the left side of the bladder extending down to the vesical neck, causing obstruction and obscuring the left ureteral orifice. Operation: suprapubic cystotomy and excision of subtrigonal cyst. A large cystic mass was found in the region of the trigone, which when incised appeared to consist of several smaller cysts. These extended up under the mucous membrane of the posterior surface of the bladder, and did not involve the ureteral orifices. Cystic areas were completely excised. Pezzer catheter inserted. Pyelo-nephritis occurred during convalescence but yielded readily to chemotherapy. Cystoscopy previous to discharge from hospital showed an inflamed mucosa and some slough on the floor of the bladder. No obstruction present at vesical neck. Left kidney normal.

CASE 2

J.D., male, aged 72 years: this case having been previously reported only a brief synopsis will be given here.

Admitted May 6, 1943. Complaint, acute retention. The history, physical examination and laboratory findings were consistent with those found in an ordinary case of prostatism with retention. The salient features, however, were those demonstrated by the barium enema and fluoroscopy. A persistent mass was seen filling the pelvis and displacing the rectum and sigmoid markedly to the right. The bladder seemed to lie anterior to the

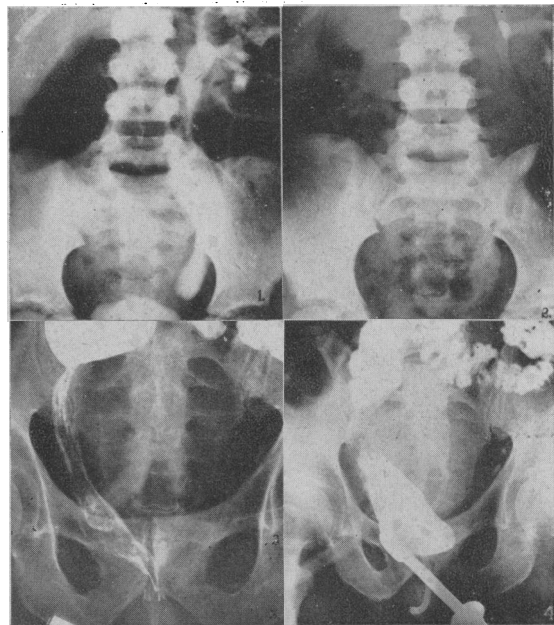


Fig. 1. (Case 1).—Preoperative. Intravenous pyelography. Note marked dilatation of left ureter and pelvis. Fig. 2. (Case 1).—Postoperative. Marked regression of hydroureter and hydronephrosis, left. Fig. 3. (Case 2).—Barium enema. The subtrigonal mass is displacing the rectum to the right. Fig. 4. (Case 2).—Cystogram shows bladder to be lying anteriorly in almost normal position.