circulation depends on a patent ductus arteriosus, and is compatible only with a few weeks or months of life. The adult type consists of a localized narrowing about the level of the ductus arteriosus, and these patients may live for many years; in Abbott's series the ages of death varied from 3 to 92 years, with an average of 32. In 200 cases which came to necropsy the atresia was complete in 47, extreme (under 6 mm.) in 108, and moderate in 45. The figures of Reifenstein *et al.* (1947) are similar, the average age at death being 35. Both workers found that rupture of the aorta was a common cause of death, especially among younger patients. Abbott found it 40 times in her 200 cases examined at necropsy, and all Reifenstein's cases occurred between the ages of 10 and 30. The rupture generally occurred in the ascending aorta, but was sometimes seen at, or near the site of, the obliterated ductus. Here the aorta was often dilated at the emergence of the intercostal arteries, or kinked by the ligamentum arteriosum. Histological examination of the aorta nearly always showed medial degeneration. There was interruption and diminution of the elastica and muscle, with fatty and hyaline degeneration. The connective tissue was increased: Gore and Seiwert (1952) found this in 85 cases of dissecting aneurysm, not necessarily associated with coarctation; hypertension was present in only 58% of cases.

The recognition of coarctation of the aorta is not difficult if the diagnosis is kept in mind. Hypertension is present in most cases, but may be only slight in children. A systolic murmur is often heard over the front and back of the chest, where the enlarged collateral circulation may be seen and felt; the unusual site of the murmur is most suggestive of a coarctation. The femoral pulses are absent, or are feeble and delayed. Radiology may show notching of the lower borders of the ribs due to the hypertrophied intercostal arteries.

Surgical treatment of the condition is generally undertaken in children and young adults; therefore it is necessary to make the diagnosis early, generally before any symptoms arise.

If the femoral arteries are palpated as a routine during a medical examination cases of coarctation of the aorta will not be missed.

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Rupture of a Congenital Solitary Kidney

The disaster of severe trauma to a solitary kidney of congenital origin is fortunately rare. Orkin (1950) has collected seven examples. The following case is a reminder of this tragic possibility.

CASE REPORT

A man aged 63, returning from his work in a dockyard, tripped and fell across a heavy chain, injuring his left side. He walked home and, fearing he had injured his ribs, then walked to hospital. The casualty officer found severe tenderness over the left loin and left lower ribs, and took the wise precaution of inspecting his urine. Gross haematuria was found and the patient was admitted. Shortly after admission the pulse rose and the blood pressure fell. In half an hour an enormous tumour grew in the left loin and projected anteriorly, to be clearly delineated like a huge hydronephrosis. Blood transfusion failed to control the falling blood pressure, and there was every justification for a rapid transfer to the operating theatre.

Operation.—Through a left lumbar incision a huge perirenal haematoma was explored. In the midst of free fluid,

blood, and clot lay a lacerated kidney with its pedicle almost completely detached. The kidney was lifted out and the bleeding pedicle readily controlled. The cavity formed by the haematoma extended more than an inch (2.5 cm.) beyond the right margin of the vertebral column. Palpation to the right was thought to confirm the presence of a right kidney. With control of haemorrhage the general condition improved rapidly. In all, six pints (3.4 litres) of blood was given.

Post-operative Course.—As no urine was voided twenty-four hours after operation a catheter was passed and 1 oz. (28 ml.) of bloody urine withdrawn. The blood pressure was normal, and with no further secretion by the end of the second day it was noticed that the right testicle was not palpable in the scrotum or elsewhere. On the fourth day cystoscopy was performed and in a contracted bladder no right ureteric orifice could be found. The absence of a right kidney was now presumed. The patient died on the tenth post-operative day. A post-mortem examination confirmed the complete absence of the right kidney and ureter. The right adrenal gland was present. The bladder was small and thick-walled, with poor development of the right side of the trigone. There was a small but complete right intra-abdominal testicle. Examination of the left kidney confirmed that it was split transversely through the hilum and that the vascular pedicle was almost completely torn.

COMMENT

In this case the rapid deterioration from haemorrhage necessitated urgent operation. It was not justifiable to attempt intravenous pyelography, although it is agreed that this practice has an established place in the management of renal injury. Orkin (1950), amongst many others, has stressed how this investigation may determine the necessity or otherwise for immediate exploration of the damaged kidney, and how valuable it is in revealing a functioning kidney on the other side. It would have been possible to do a cystoscopy before nephrectomy in the above case, and had the absent testicle been noted suspicion of a solitary kidney might have been aroused. The fact that the injured kidney could not be saved does not forgive this inadequate pre-operative management. In other circumstances recognition of a solitary kidney might have encouraged an attempt at suture or even vascular repair.

Hamilton and Peyton (1950) reported a case in which by pyelography and cystoscopy it was recognized that an injured hydronephrotic kidney was solitary. Bleeding persisted and the kidney had to be explored; a 10-cm. laceration was sutured and the kidney saved. Orkin (1950) described the radiological and cystoscopic confirmation that an injured kidney was solitary. In this case operation was not required and conservative treatment was successful.

Congenital solitary kidney is not unduly rare. Collins (1932) collected 581 examples, and Longo and Thompson (1952) suggested that the necropsy rate is about 1 in 1,000 cases and the clinical incidence about 1 in 1,500 cases. If we add the possibilities of hypoplastic or maldeveloped kidneys, of kidneys destroyed by disease, and of kidneys removed by previous nephrectomy, injury to a solitary kidney is an accident worth consideration. The solitary kidney may be damaged rather more readily, as it is usually larger and therefore less protected than a normal kidney. Longo and Thompson (1952) have shown a high incidence of disease in the congenitally solitary kidney. This, too, may make it prone to injury—hydronephrosis being a common complication. Anomalies of the genital tract are common in females with solitary kidney; in males the association occurs in only 10% of cases. This is the second case I have seen in which an absent testicle was noted with a congenitally absent kidney.

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