Intervention Radiology In Kenya

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Intervention Radiology (IR) is a sub-specialty of radiology that provides for minimally invasive image guided diagnosis and treatment. The unique concept here is the use of imaging and minimal invasive techniques to reduce risk to the patient reduce hospital stay and cost to the patient. It was developed by radiology- angiographers with the first intervention carried out by Charles Dotter in 1964 where percutaneous angioplasty of the superficial femoral artery was done on an elderly patient with peripheral arterial disease (1, 2). Subsequently, IR has been adopted into diagnostic and therapeutic procedures and is currently taking centre stage in the practice of medicine.

IR comprises a broad spectrum of both diagnostic and therapeutic procedures. The diagnostic procedures include image guided biopsies and fine needle aspirations (FNA), angiograms and cholangiograms. Diagnostic angiograms have become less common being replaced with combination of non invasive vascular imaging modalities such as ultrasound, computed tomographic angiography (CTA) and magnetic resonance angiography (MRA) (3).

Therapeutic procedures are divided into vascular, biliary, catheter placement, ablation, genitourinary and pain management. Vascular procedures include balloon angioplasty/stenting in vascular strictures, endovascular aneurysm repair and coiling, embolization of arteriovenous malformations. Embolization is also utilized in gynaecological disorders in management of uterine fibroids (as an alternative to hysterectomy and myomectomy) and post partum haemorrhage (4, 5). Prostatic arterial embolization (PAE) initially used for prostate related haematuria is currently used for benign prostate hyperplasia albeit on an experimental basis (6). Other vascular techniques include thrombolysis, inferior venacava (IVC) filter placement, trans jugular intra-hepatic porto-systemic shunts (TIPS) in chronic liver disease, dialysis related interventions and endovenous laser treatment in varicose vein treatment.

Endoscopic techniques in decompression of the obstructed biliary system have been utilized locally in management of gallstone disease (7). An external drain can also be placed for decompression of obstructive jaundice and stenting after bypassing the obstruction. Other procedures include vascular catheters (central and peripheral), drainage catheters (for pleural effusion, ascites and other pathological fluid collections), gastrostomy and jejunostomy tubes. Genitourinary IR interventions include percutaneous nephrostomy tube insertion and stenting in obstructive uropathy. Pain management includes percutaneous vertebroplasty for fractured vertebrae to restore height and relieve pain.

Oncological ablation is a growing field in IR with various percutaneous techniques for tumour ablation including (3):

- Injection (hot saline, ethanol, acetic acid)
- Heating (radiofrequency, electrocautery, laser, microwave, high intensity focused ultrasound)
- Freezing (cryotherapy)

Similar techniques have also been used in trauma. IR controls haemorrhage by blocking bleeding vessels

through embolization or relining them through stenting with the added advantage of avoiding the physiological stress of surgery (8, 9). IR, which is recommended in patients who are hemodynamically stable, has been effectively used in this subset of patients as reported by Magabe et al in a paper in this issue (10). It can also be effective in hemodynamically unstable patients especially in the setting of pelvic fractures (8). While the success rate in trauma is high as demonstrated by Magabe el al (10), complications may be difficult to distinguish from the effects of the trauma.

There are currently less than ten trained intervention radiologists in East Africa, all of whom are practicing in Kenya. However, there is an increased interest in the specialty and the numbers are growing. The high cost of equipment and consumables is limiting growth, accessibility and acceptability of intervention radiology procedures. While in Kenya diagnostic IR is offered in many hospitals, the therapeutic and specialized IR procedures are offered at a limited number of institutions including the Kenyatta National Hospital (KNH), The Aga Khan University hospital, the Nairobi Hospital, MP Shah Hospital, The Karen Hospital and Nairobi West Hospital all in the capital city, Nairobi.

The humble beginnings of IR in Kenya can be traced to the establishment of a basic angiography unit with a simple fluoroscopy machine at the KNH in the early 1990s (8). The pioneers of this included Prof. J Kittony and Dr. Milcah Wambugu. They were soon followed Dr. Henry Wanga, the late Dr Tata and Dr. Daniel Kibaya in trying to grow the field. While in the beginning the unit could only perform as little as 5 cases a week, this has since grown to the current ten cases a day. There is a variety of cases including image guided biopsies, nephrostomy insertions, ureteric stenting, biliary drainages and stenting, catheter insertions and vascular procedures (angiograms and embolization). There is also a weekly IR clinic that serves up to 60 patients.

Currently, training of radiology residents has included more exposure to IR procedures. Newly graduated radiologists are now well versed in the basic IR procedures and are now working in various towns in the country including Mombasa, Nyeri and Kiambu. Interventional radiology is becoming an essential service in management of patients and should be availed in every major hospital. This can only be achieved through appreciating its value and promoting training and capacity building among radiologists and encouraging multi disciplinary approach in managing patients.

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