ROLE OF ANGIOEMBOLISATION IN MANAGEMENT OF HEMORRHAGIC UROVASCULAR EMERGENCIES

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INTRODUCTION

- Trans-arterial embolization is an effective method in the management of hemorrhagic urovascular emergencies irrespective of its etiology.
- The aim of this study is to evaluate role of selective angioembolisation therapy in the management of urovascular bleed and to evaluate the morphological and functional impact in the embolised organ in the medium term follow-up.

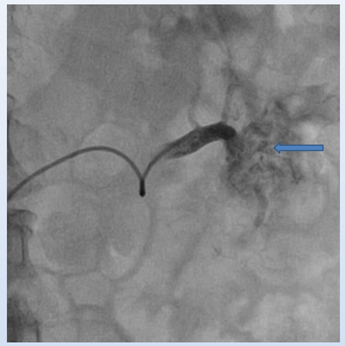
MATERIAL AND METHODS

- The hospital records of eleven patients with twelve renal units and two patients with hematuria of bladder origin, who underwent selective angioembolisation for massive urovascular bleed during the period of October 2012 to October 2015 at a single centre were retrospectively reviewed.
- The outcome measures such as success rate, pre and post procedural requirement of blood transfusion , periprocedural complications , hospital stay and long term outcome such as appearances of kidneys on imaging and blood pressure were analysed. The success of procedure was defined as complete occlusion of blood flow on post-embolisation angiography.

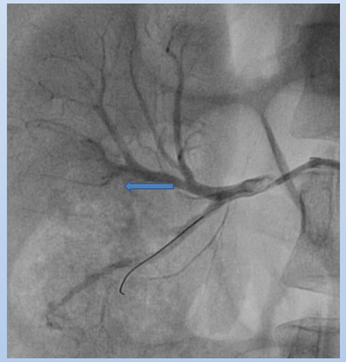
Table 1

SL. No.	Pt. details	Indication	Bld. Transfusion	Imaging Findings	Method	Complication	Outcome
1.	45yr/F	Blunt Trauma	3	Pseudoanerysm	Coil embolisation	Flank pain & fever-2 days	Successful
2	24/M	Blunt Trauma	4	Pseudoanerysm	Coil embolisation	No	Successful
3	58/M	Post PCN -bleed	4	Pseudoanerysm	Coil embolisation	No	Successful
4	45/F	Rt PCNL bleed	5	Pseudoanerysm	Coil embolisation	No	Successful
5	32/F	Rt PCNL bleed	6	Pseudoaneurysm	Gel foam embolisation	No	Successful
6	70/M	Rt. PCNL -bleed	4	Pseudoanerysm	Coil embolisation	No	Successful
7	52/F	B/L AML	4	Rt Segmental & Lt subsegmental artery	Coil +gelfoam	Nausea,vomiting,flank pain	Successful
8	86/M	Lt Metastatic RCC	5	AV Malformation	PVA particle	Fever,flank pain	Successful
9	24/M	Post renal biopsy	4	Pseudoanerysm	Coil embolisation	None	Successful
10	21/M	Post renal biopsy	4	Pseudoanerysm	Coil embolisation	None	Successful
11.	58yr/M	Post Radical cystectomy with hematuria	7	Internal iliac artery pseudoanerysm	Coil embolisation and PVA particle	None	Successful
12.	67yr/F	Ca cervix post RT-Intractable hematuria	6	B/l internal iliac artery angio -embolisation	Post.division- coil embolisation,Ant. division- gel foam	Failed,,developed rebleed	Simple cystectomy
13.	28 yr/M	Rt partial nephrectomy-Intractable hematuria	4	Midpolar artery pseudoaneurysm	Coil embolisation and PVA particles	None	Successful

PRE-EMBOLISATION AND POST-EMBOLISATION



METASTATIC RCC-AV MALFORMATION



POST PARTIAL NEPHRECTOMY-PSEUDOANEURYSM

POST RADICAL CYSTECTOMY-PSEUDOANEURYSM

RESULTS

- Indications for angioembolisation included blunt renal trauma (2), metastatic renal cell carcinoma(RCC) (1), post-PCNL(percutaneous nephrolithotomy) (3), post-percutaneous nephrostomy (1), angiomyolipoma(AML) (2), renal biopsy (2), post partial nephrectomy (1), Cervical cancer with intractable hemorrhagic radiation cystitis (1), post radical cystectomy with internal iliac artery pseudoaneurysm (1). (Table 1)
- Mean time between the first presentation and embolization was 34.46 hours (4hrs to 96 hrs). Mean pre-procedural blood transfusion requirement was 4.6 units (3 units to 7 units). None of these patients required post-procedural blood transfusion.
- The embolization agents included coils , poly vinyl alcohol (PVA) particles and gel foam .
- Clinical success was achieved in 93% cases. Minor complications in the form of post-embolization syndrome (PES) were seen in three patients including fever ,flank pain ,nausea and vomiting and were managed conservatively.
- All patients except one with metastatic RCC are in follow-up till date. There were no morphological changes , no incidence of hypertension or renal impairment in the medium term follow-up till date.

DISCUSSION

- Morita S et al (1) studied 17 patients with grade 4 renal injuries managed with angio-embolization ,and reported complete success with preservation of kidney function. Kothary and colleagues (2) reported angioembolization for control of angiomyolipoma (AML) in 30 patients. A high risk of recurrence of bleeding was reported in patients with associated features of tuberous sclerosis.
- Pisco et al (3)reported complete control of bleeding in 69 percent of cases with pelvic malignancies by embolizing the anterior division of internal iliac artery. Nabi etal (4) reported management of intractable hematuria from bladder tumour by angioembolisation of anterior division of internal iliac artery.
- In all our cases bleeding was intractable and would have required open surgical intervention to control haemorrhage or sacrificing the involved organ if embolisation facilities were not available . There was a remarkable reduction in the requirement of blood transfusion following the procedure and complications were minor and easily manageable, leading us to conclude that this procedure should be recommended much early in the course of management.

TAKE HOME MESSAGE

- Therapeutic transarterial angioembolisation (TAE) is highly effective & minimally invasive technique for the management of urovascular bleed of various etiologies and at the same time is the key to salvage the involved organ.
- Hence, it should always be considered in the management of post-operative bleeding before embarking on surgical exploration.

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