glomerular functions when measured 7 days after IRI, despite the attenuation in the alterations in some of the oxidative stress markers indicating a weak renoprotective effect of BCP in this condition.

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[59] The effect of Alda-1, aldehyde dehydrogenase-2 agonist, on the renal functions following ischaemia–reperfusion injury

Fayez Hammad, Suhail Al-Salam, Loay Lubbad
Department of Surgery and Department of Pathology, College of Medicine and Health Sciences, United Arab Emirates University, Al Ain, United Arab Emirates

Objective: To investigate the effect Alda-1, aldehyde dehydrogenase-2 (ALDH2) agonist, on renal functions following ischaemia–reperfusion (IRI) injury. IRI induces the production of aldehydes, which are detoxified by aldehyde dehydrogenases (ALDHs). Alda-1 is a selective ALDH2 agonist and its protective effect has been demonstrated in several conditions; however, the effect of Alda-1 on the kidney or on renal IRI has not been investigated.

Methods: We investigated the effect of Alda-1 on renal dysfunction following IRI. Wistar rats underwent left IRI for 40 min. Group-Alda (n = 11) received Alda-1 starting 24 h before IRI and continued for 7 days and then renal functions were measured. Group-Vx (n = 11) underwent the same protocol but received only the dissolvent.

Results: Alda-1 did not affect renal blood flow or glomerular filtration rate in the left ischaemic kidney in Group-Alda compared to the Group-Vx [mean (SD) 3.05 (0.50) vs 3.53 (0.70) mL/min, and 0.40 (0.06) vs 0.51 (0.08) mL/min/1.73 m^2, respectively; both P > 0.05]. However, left renal fractional sodium excretion was significantly worse in Group-Alda [mean (SD) 2.80 (0.43) vs 1.37 (0.36)%; P = 0.02]. Alda-1 also adversely affected the gene expressions of kidney injury molecule-1 (KIM-1) and neutrophil gelatinase-associated lipocalin (NGAL) [mean (SD) 217 (38) vs 99 (13) and 49 (13) vs 20 (5), respectively; both P < 0.05] and the alterations in tumour necrosis factor α (TNF-α), transforming growth factor β1 (TGF-β1), plasminogen activator inhibitor 1 (PAI-1), fibronectin 1 (Fn1) and p53 [mean (SD) 4.4 (0.9) vs 2.1 (0.3), 1.5 (0.1) vs 1.1 (0.1), 30.0 (2.7) vs 11.7 (2.3), 3.6 (0.4) vs 2.1 (0.2) and 1.3 (0.1) vs 0.9 (0.07), respectively; all P ≤ 0.05]. This was associated with intratubular crystal deposition suggestive of crystalline nephropathy.

Conclusion: Alda-1 exacerbated the IRI-induced renal tubular dysfunction and alterations in pro-inflammatory and pro-fibrotic cytokines, which appears be due to crystalline nephropathy. Extreme caution should be taken when administering Alda-1 or other potentially crystal-forming medications to subjects with underlying kidney disease.

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[60] Can flexible ureterorenoscopy and holmium laser lithotripsy cause renal arteriovenous malformation? Report of a case

Fayez T. Hammad a, Abdelrahman Bashar b

a College of Medicine and Health Sciences, United Arab Emirates University, Al Ain, United Arab Emirates, b Urology Division, Tawam Hospital, Abu Dhabi, United Arab Emirates

Objective: To report on the second case illustrating the possibility of developing renal arteriovenous malformation (AVM) following relatively safe flexible ureterorenoscopy (FURS) and holmium laser lithotripsy. The use of FURS and holmium laser lithotripsy for the treatment of large renal calculi is gaining in popularity and has been shown to be safer than percutaneous nephrolithotomy (PCNL). The formation of AVM, although rare, is well-documented following PCNL. However, reviewing the literature up to June 2018, revealed only one reported case of AVM following FURS and holmium laser lithotripsy.

Methods: In the current case report, a 79-year-old man with multiple comorbidities including hypertension, diabetes and Stage-4 chronic kidney disease who had previously undergone left-side extracorporeal shockwave lithotripsy and FURS with holmium laser lithotripsy presented with bilateral symptomatic large renal stones. He underwent simultaneous bilateral FURS and holmium laser lithotripsy and was discharged home the next day with almost clear urine.

Results: However, 4 days later, he presented with gross haematuria, which required continuous bladder irrigation and blood transfusion. Computed tomography showed a left subcapsular, perinephric and retroperitoneal haematoma. Angiography revealed pseudoaneurysm in two small branches of the left main renal artery with contrast extravasation. Both branches were selectively embolised using micro-coils and the haematuria ceased.

Conclusion: Although a relatively safe procedure, FURS and holmium laser lithotripsy can be associated

1 In affiliation with United Arab Emirates in affiliation with Johns Hopkins Medicine, Baltimore, MD, USA.
with major complications such as intrarenal AVM. This can probably be prevented by judicious and careful use of laser energy in patients with large stone burdens and premorbid conditions.

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[61] Surgical management of pain as a complication of radio-embolisation of varicocoele

Abdalla Alhammadi, William Akakpo, Abdulmajeed Althobity, Sebastien Beley

Diaconesses Hospital, Paris, France

Objective: To present our experience of surgical management of pain as a complication of radio-embolisation of varicocoele. The indication to treat a painful varicocele is well established; however, the approach of treatment whether surgical or radiological remains controversial. The use of materials such as coils during radio-embolisation may lead to exacerbation of pain, which might require surgical removal of the endovascular material.

Methods: All patients between March 2016 and February 2017, who experienced painful exacerbation after radio-embolisation of a varicocoele, were included in this retrospective single-centre study. Ultrasonography was performed to exclude recurrence or other aetiology. A transperitoneal laparoscopic surgical procedure allowed removal of embolisation material and gonadal vein after ligation between the internal inguinal ring and its distal end on the renal vein or inferior vena cava.

Results: Three patients were operated upon using this technique. Two patients had unilateral left and one bilateral varicoceles with radio-embolisation. No intraoperative complications were identified. The intervention reduced the pain allowing early recovery and continuation of usual daily activities.

Conclusion: The exacerbation of pain in a varicocoele after radio-embolisation is a rare complication but has significant consequences on patient quality of life and thus requires appropriate care. Removal of the material laparoscopically seems a method of choice. The elimination of other painful causes before any surgical management remains essential.

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[62] The mystery of gross haematuria in a patient on leflunomide: A case report and literature review

Vincent Khor, Kwok Ying Lie

Ng Teng Fong General Hospital, Singapore, Singapore

Objective: To report a case of gross haematuria in a patient on leflunomide. In 1998, the USA Food and Drug Administration approved leflunomide for the treatment of active rheumatoid arthritis. Leflunomide is classified as a disease-modifying anti-rheumatic drug (DMARD), which has immunomodulatory, anti-inflammatory, analgesic, and antipyretic effects.

Methods: We report an atypical case of a 70-year-old woman who presented with two isolated episodes of gross haematuria with mild thrombocytopaenia, 5 months after she was started on leflunomide. Cystoscopy showed an abnormal bladder neovascularisation pattern with bleeding from one of the small vessels. Based on the timeline and clinical course, we hypothesised that the gross haematuria and neovascularisation was associated with the use of leflunomide. An electronic search of PubMed/MEDLINE was performed with the text words ‘Leflunomide’, ‘haematuria’, ‘angiogenesis’, ‘neovascularization’, and ‘DMARD’. The relevant articles were selected for review.

Results: The literature review revealed one report of gross haematuria that was associated with leflunomide, and this was due to its interaction with warfarin. There were no reports that related to an abnormal bladder neovascularisation with leflunomide as seen in our case. She presented with two episodes of gross haematuria after she was started on leflunomide and presented to our hospital on her second episode. The second episode of gross haematuria was severe, which required blood transfusions, multiple manual bladder washouts, and cystodiathermy in the operating theatre. Rigid cystoscopy showed an abnormal neovascularisation pattern throughout the bladder. The haematuria stopped subsequently. The thrombocytopaenia improved, and haematuria did not recur after the cessation of leflunomide. A follow-up cystoscopy 3 months later showed a similar neovascularisation pattern with no active bleeding.

Conclusion: The literature shows that leflunomide has anti-proliferative and anti-angiogenesis activities. To the best of our knowledge, we have not been able find a reasonable explanation for the observed bladder neovascularisation pattern and its association with DMARD, particularly leflunomide.

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