



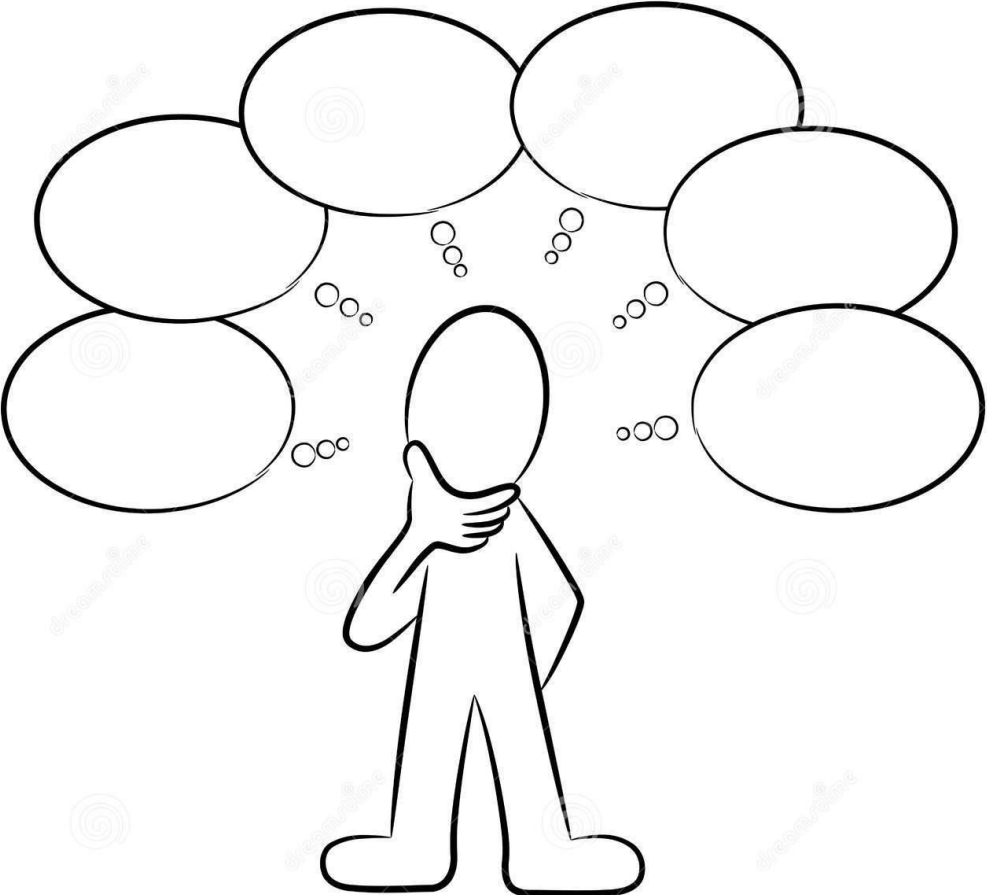
13^{as} JORNADAS DE **UROLOGIA**
DA ZONA CENTRO EM MEDICINA FAMILIAR

Litíase urinária

Edgar Tavares da Silva
edsilva@chuc.min-saude.pt



Litíase urinária



Litíase urinária



Roteiro

ETIOLOGIA, EPIDEMIOLOGIA E PATOGÉNESE

AVALIAÇÃO

Avaliação básica

TRATAMENTO MÉDICO

Cólica renal simples

Quimólise/profilaxia

Microlitíase assintomática

TAKE-HOME MESSAGES

Roteiro

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TRATAMENTO MÉDICO

Cólica renal simples

Quimólise/profilaxia

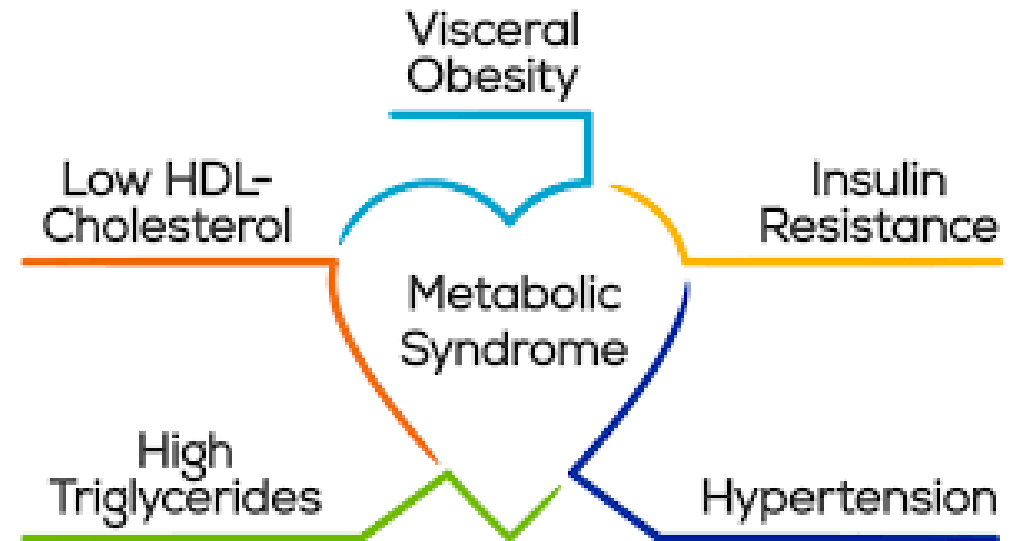
Microlitíase assintomática

TAKE-HOME MESSAGES

Etiologia, epidemiologia e patogênese

- Prevalência 1 a 15%
 - Idade – 4ª à 6ª décadas de vida
 - Género – 3:1→1,3:1
 - Região geográfica
 - Profissional

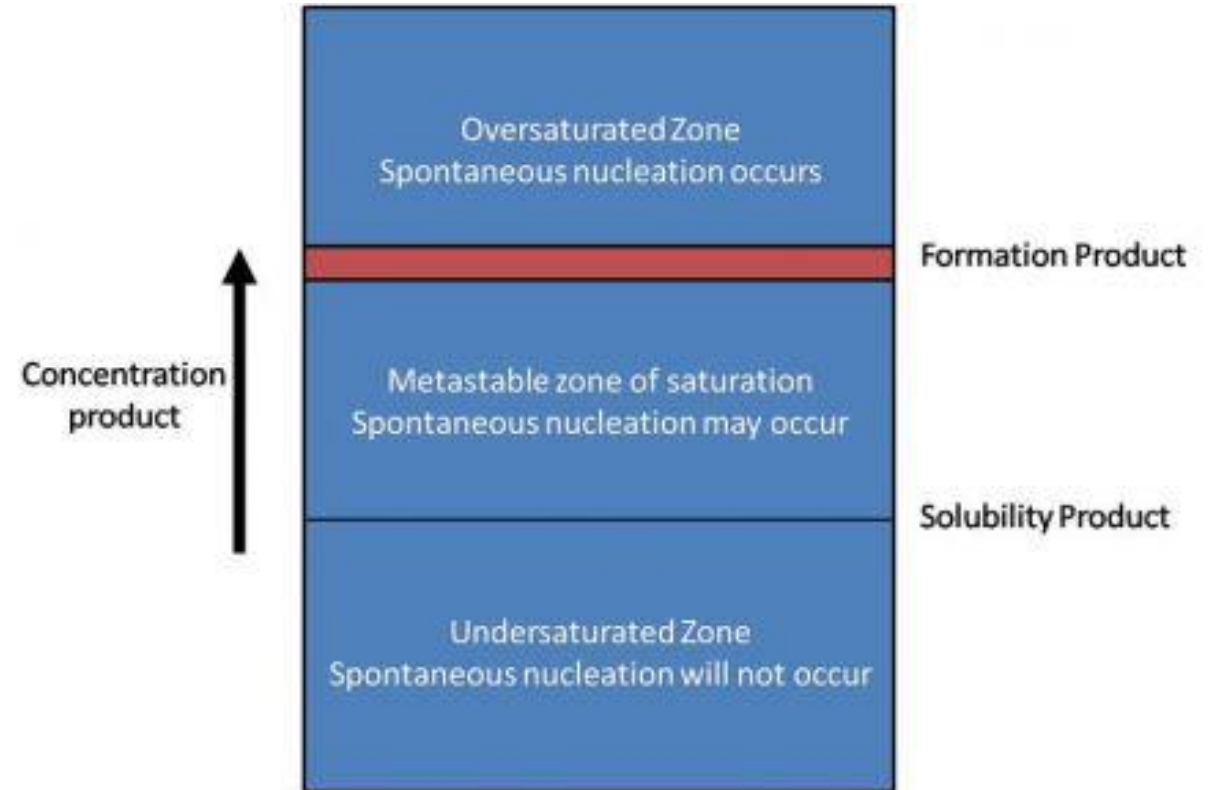
- Factores de risco
 - Dieta
 - Exposição ambiental
 - Alterações anatómicas
 - Obesidade



Etiologia, epidemiologia e patogénese

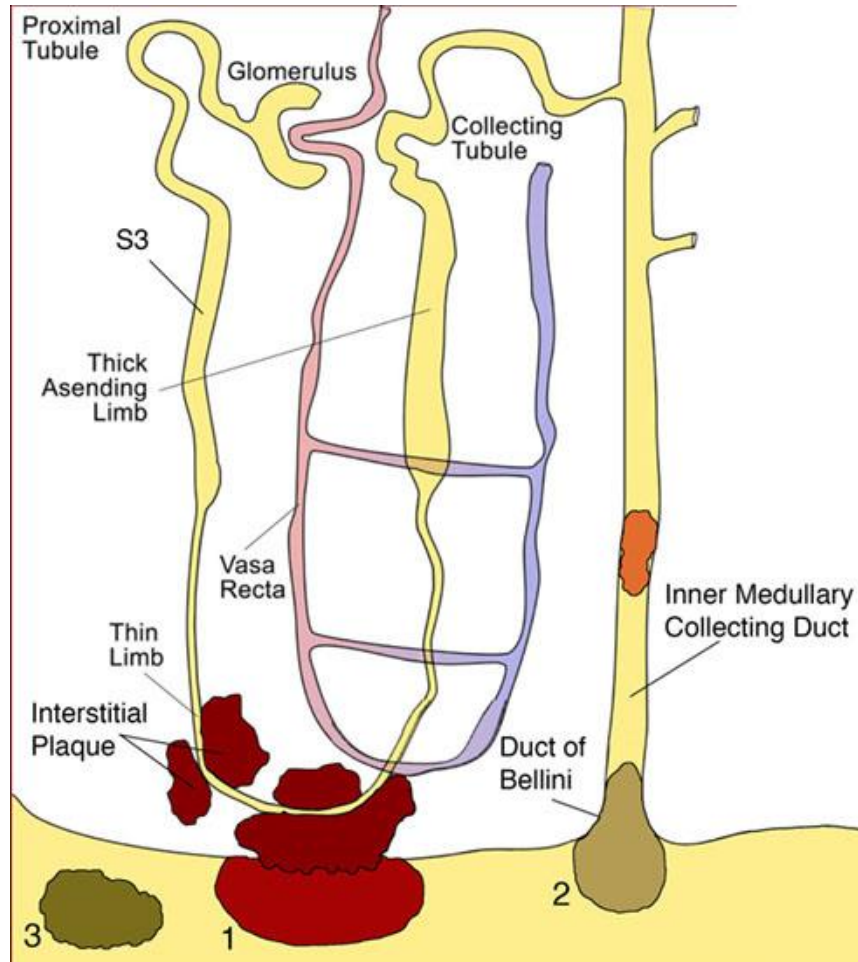
Promoting factors	Inhibiting factors
Calcium	Inorganic
Sodium	Citrate - Quelante de Ca^{2+}
Oxalate	Magnesium - Complexa com Ox
Urate	Pyrophosphate - Impede cristalização CaPO_4
Cystine	Organic
Low urine pH	Tamm-Horsfall protein
Tamm-Horsfall protein	Urinary Prothrombin fragment 1
Low urine flow	Protease inhibitor: inter α inhibitor
	Glycosaminoglycans
	Osteopontin (Uropontin)
	Renal lithostathine
	Other Bikunin, Calgranulin
	High urine flow

CaOx



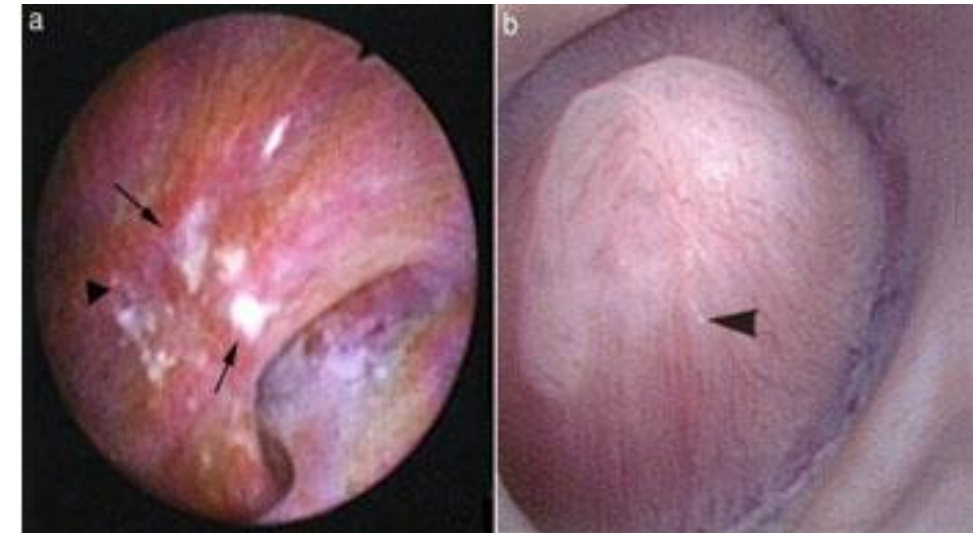
Etiologia, epidemiologia e patogénese

TEORIA DAS PARTÍCULAS LIVRES



TEORIA DAS PARTÍCULAS FIXAS:

- Lesão do urotélio
- Stress oxidativo
- Placas de Randall



Relationship between Calcium Stone Disease and Metabolic Syndrome

Emre Can Polat,^{1*} Levent Ozcan,² Suleyman Sami Cakir,³ Murat Dursun,³ Alper Otunctemur,³ Emin Ozbek³

Purpose: We aimed to investigate relationship between metabolic syndrome and calcium-oxalate stone formation.

Materials and Methods: Between January 2008 and February 2015 we retrospectively investigated biochemical parameters and anthropometric characteristics (height, weight, and waist circumference) of 198 patients who had calcium-oxalate stones and we also randomly selected 200 participants who had no history of urolithiasis as the controls.

Results: The presence of obesity increased the risk of calcium stones in both men ($P = .003$, OR = 2.92) and women ($P = .03$, OR = 2.18). Diabetes was significantly correlated to the risk of calcium stones ($P = .04$, OR = 1.94). However, when calculated separately for men and women, diabetic men had a higher risk of calcium-oxalate stone disease ($P = .04$, OR = 2.59), but diabetic women did not ($P > .05$). Hypertension also significantly increased the risk of calcium stones when compared with normotensive individuals ($P = .0001$, OR = 3.03).

Conclusion: The risk for the development of calcium-oxalate stone disease is most significantly associated with the patient's body mass index and the presence of hypertension.

Etiologia, epidemiologia e patogénese

Urolithiasis
DOI 10.1007/s00240-016-0956-8



REVIEW

Kidney stones diseases and glycaemic statuses: focus on the latest clinical evidences

Leonardo Spatola¹ · Claudio Angelini¹ · Salvatore Badalamenti¹ ·
Silvio Maringhini² · Giovanni Gambaro³

Aumento da excreção – Ca²⁺, Na⁺ e ácido úrico

Diminuição – Citrato

Insulin Resistance



Defect in ammoniogenesis

Defect in Sodium Reabsorption

Hypocitraturia

Defect in Glutamine utilization



Low urinary pH



Uric Acid lithiasis

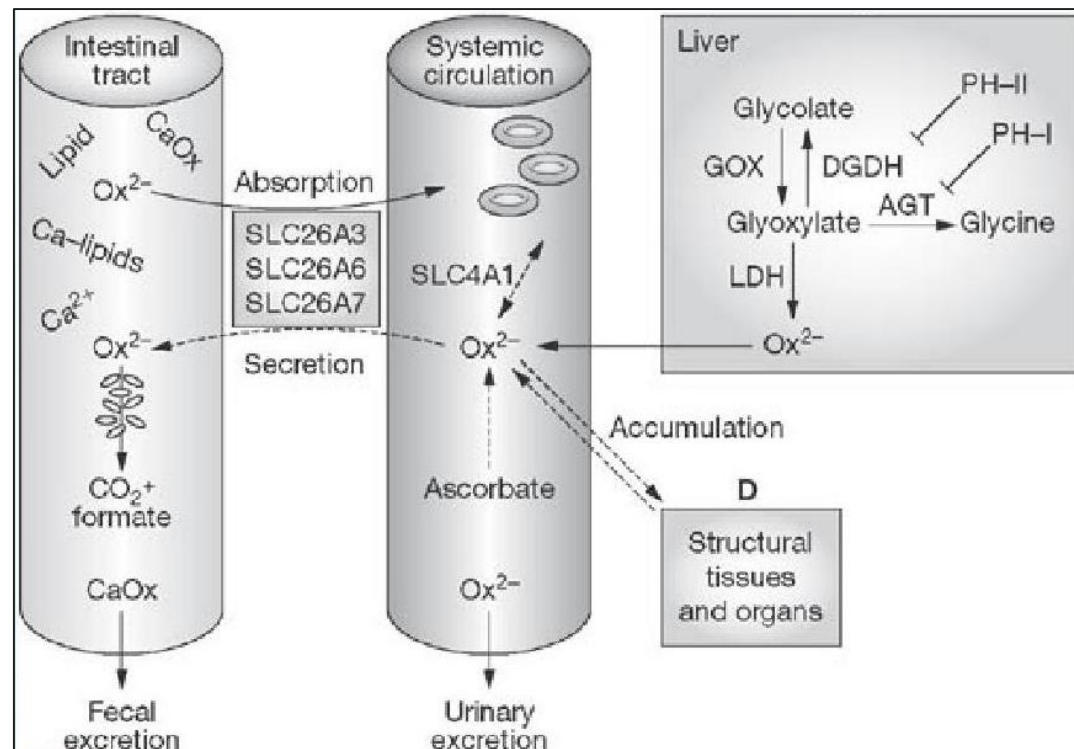
Calcium Oxalate lithiasis

Etiologia, epidemiologia e patogénese

Metabolic syndrome and bariatric surgery in stone disease etiology

Andrea Tasca

Current Opinion in Urology 2011, 21:129–133



Malabsorção

Ácidos gordos – Ca²⁺ e Mg⁺

Desidratação

Hipocitratúria

Hipocalciúria

Roteiro

ETIOLOGIA, EPIDEMIOLOGIA E PATOGÊNESE

AVALIAÇÃO

Avaliação básica

TRATAMENTO MÉDICO

Cólica renal simples

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Microlitíase assintomática

TAKE-HOME MESSAGES

Avaliação básica

EUROPEAN UROLOGY 67 (2015) 750–763

available at www.sciencedirect.com
journal homepage: www.europeanurology.com



Guidelines

Metabolic Evaluation and Recurrence Prevention for Urinary Stone Patients: EAU Guidelines

Andreas Skolarikos^{a,}, Michael Straub^b, Thomas Knoll^c, Kemal Sarica^d, Christian Seitz^e, Ales Petržík^{f,g}, Christian Türk^h*

Todos os doentes devem fazer uma avaliação básica

Avaliação do risco

Avaliação básica

- História clínica
- Bioquímica
- Sumária de urina com análise do sedimento
- Urocultura
- Imagiologia
- Análise do cálculo

BOX 52-2 Abbreviated Evaluation of Single-Stone Formers

History

Underlying predisposing conditions (as per [Box 52-1](#))

Medications (calcium, vitamin C, vitamin D, acetazolamide, steroids)

Dietary excesses, inadequate fluid intake, excessive fluid loss

Multichannel blood screen

Basic metabolic panel (sodium, potassium, chloride, carbon dioxide, blood urea nitrogen, creatinine)

Calcium

Intact parathyroid hormone

Uric acid

Urine

Urinalysis

pH > 7.5: infection lithiasis

pH < 5.5: uric acid lithiasis

Sediment for crystalluria

Urine culture

Urea-splitting organisms: suggestive of infection lithiasis

Qualitative cystine

Radiography

Radiopaque stones: calcium oxalate, calcium phosphate, magnesium ammonium phosphate (struvite), cystine.

Radiolucent stones: uric acid, xanthine, triamterene

Intravenous pyelogram: radiolucent stones, anatomic abnormalities

Stone analysis

Avaliação básica

- História clínica
- Bioquímica
- Sumária de urina com análise do sedimento
- Urocultura
- Imagiologia
- Análise do cálculo
- Idade de aparecimento
- História familiar
- Predisponentes
 - Diabetes
 - Doença intestinal
 - Antecedentes cirúrgicos
- Hábitos alimentares
 - Hidratação e excessos alimentares
- Medicação
 - Suplementos de cálcio
 - Vitamina C ou D
 - Acetazolamida
 - Esteróides

Avaliação básica

- História clínica
- Bioquímica
- Sumária de urina com análise do sedimento
- Urocultura
- Imagiologia
- Análise do cálculo
- Bioquímica
 - Creatinina, BUN e sódio
 - Cálcio e PTH
 - Ác úrico
- Urina
 - pH – $>7,5$ – cálculos infecciosos
– $<5,5$ – ácido úrico
 - Cistina – nitroprussiato de sódio
 - Cristalúria
- Urocultura
 - Urocultura – urease

Avaliação básica

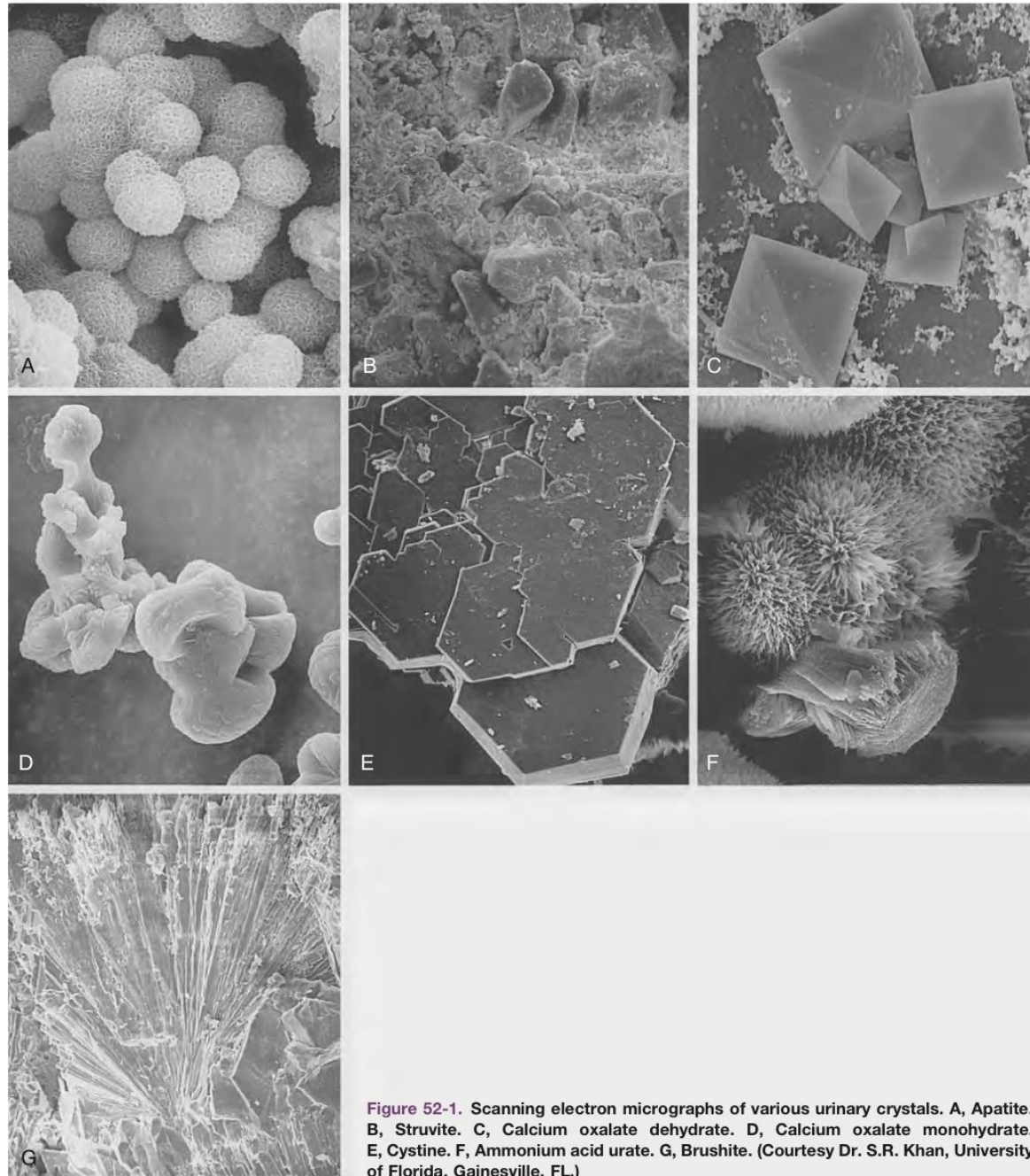


Figure 52-1. Scanning electron micrographs of various urinary crystals. A, Apatite. B, Struvite. C, Calcium oxalate dehydrate. D, Calcium oxalate monohydrate. E, Cystine. F, Ammonium acid urate. G, Brushite. (Courtesy Dr. S.R. Khan, University of Florida, Gainesville, FL.)

Avaliação básica

- História clínica
- Bioquímica
- Sumária de urina com análise do sedimento
- Urocultura
- **Imagiologia**
- Análise do cálculo

- **Imagiologia**

- **Ecografia**

- Tende a sobrestimar o tamanho dos cálculos

- **Radiografia**

- Radiopacos – Ox e PO4 de Cálcio
 - Pouco radiopacos – estruvite e cistina
 - Radiotransparentes – Ác. Úrico

 - Nefrocalcinose – Acidose tubular renal
 - Cálculo coraliforme

- **TC sem contraste**

Avaliação básica

- Perfil de risco:
 - Alto
 - Jovens, história familiar, rim único
 - Cálculos de ác úrico, estruvite
 - Hiperparatiroidismo
 - Nefrocalcinose
 - Doenças gastrointestinais
 - Doenças granulomatosas
 - Doenças genéticas
 - Cálculos de fármacos
 - Alterações anatómicas

Table 3 – High-risk stone formers

General factors

Early onset of urolithiasis (especially children and teenagers)

Familial stone formation

Brushite-containing stones (calcium hydrogen phosphate; $\text{CaHPO}_4 \cdot 2\text{H}_2\text{O}$)

Uric acid and urate-containing stones

Infection stones

Solitary kidney (the solitary kidney itself does not particularly increase risk of stone formation, but prevention of stone recurrence is of more importance)

Diseases associated with stone formation

Hyperparathyroidism

Nephrocalcinosis

Gastrointestinal diseases (ie, jejunum-ileal bypass, intestinal resection, Crohn's disease, malabsorptive conditions, enteric hyperoxaluria after urinary diversion) and bariatric surgery

Sarcoidosis

Genetically determined stone formation

Cystinuria (type A, B, AB)

Primary hyperoxaluria (PH)

Renal tubular acidosis (RTA) type I

2,8-Dihydroxyadenine

Xanthinuria

Lesch-Nyhan syndrome

Cystic fibrosis

Drugs associated with stone formation

Anatomical abnormalities associated with stone formation

Medullary sponge kidney (tubular ectasia)

Ureteropelvic junction obstruction

Calyceal diverticulum, calyceal cyst

Ureteral stricture

Vesico-uretero-renal reflux

Horseshoe kidney

Ureterocele

Avaliação básica



Baixo risco

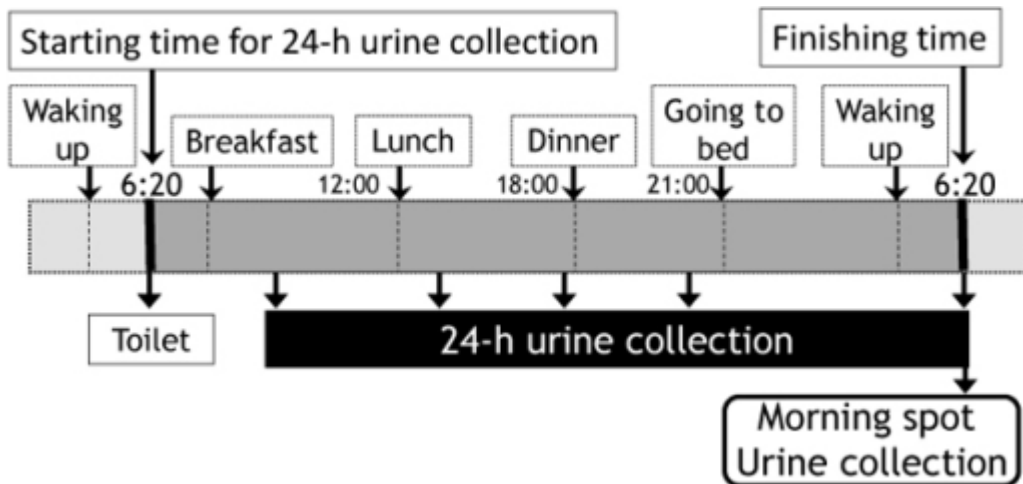
Table 4 – General preventive measures

Fluid intake (drinking advice)	Fluid amount: 2.5–3.0 l/d Circadian drinking Neutral pH beverages Diuresis: 2.0–2.5 l/d Specific weight of urine: <1.010
Nutritional advice for a balanced diet	Balanced diet ^a Rich in vegetable and fiber Normal calcium content: 1–1.2 g/d ^b Limited NaCl content: 4–5 g/d Limited animal protein content: 0.8–1.0 g/kg/d ^c
Lifestyle advice to normalize general risk factors	BMI: 18–25 kg/m ² (target adult value, not applicable to children) Stress limitation measures Adequate physical activity Balancing of excessive fluid loss

Estudo bioquímico completo

- Avaliação

- Volume
- Creatinina
- Sódio
- Cálcio
- Uratos
- Oxalatos
- Cistina
- Magnésio
- Citrato



Estudo bioquímico completo

Hipercalcúria
>200mg/dia

Hiperoxalúria
>40mg/dia

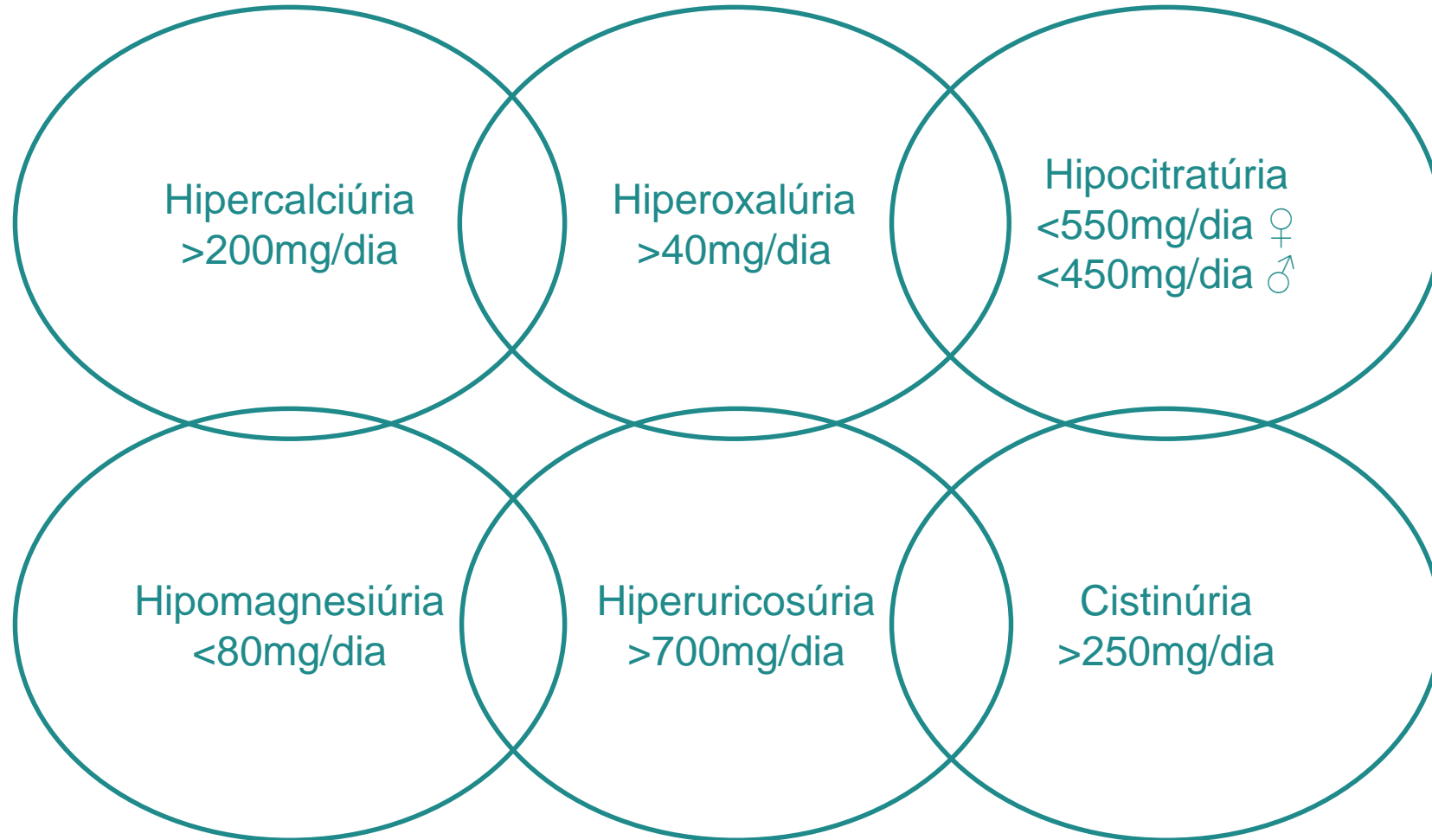
Hipocitraturia
<550mg/dia ♀
<450mg/dia ♂

Hipomagnesiúria
<80mg/dia

Hiperuricosúria
>700mg/dia

Cistinúria
>250mg/dia

Estudo bioquímico completo

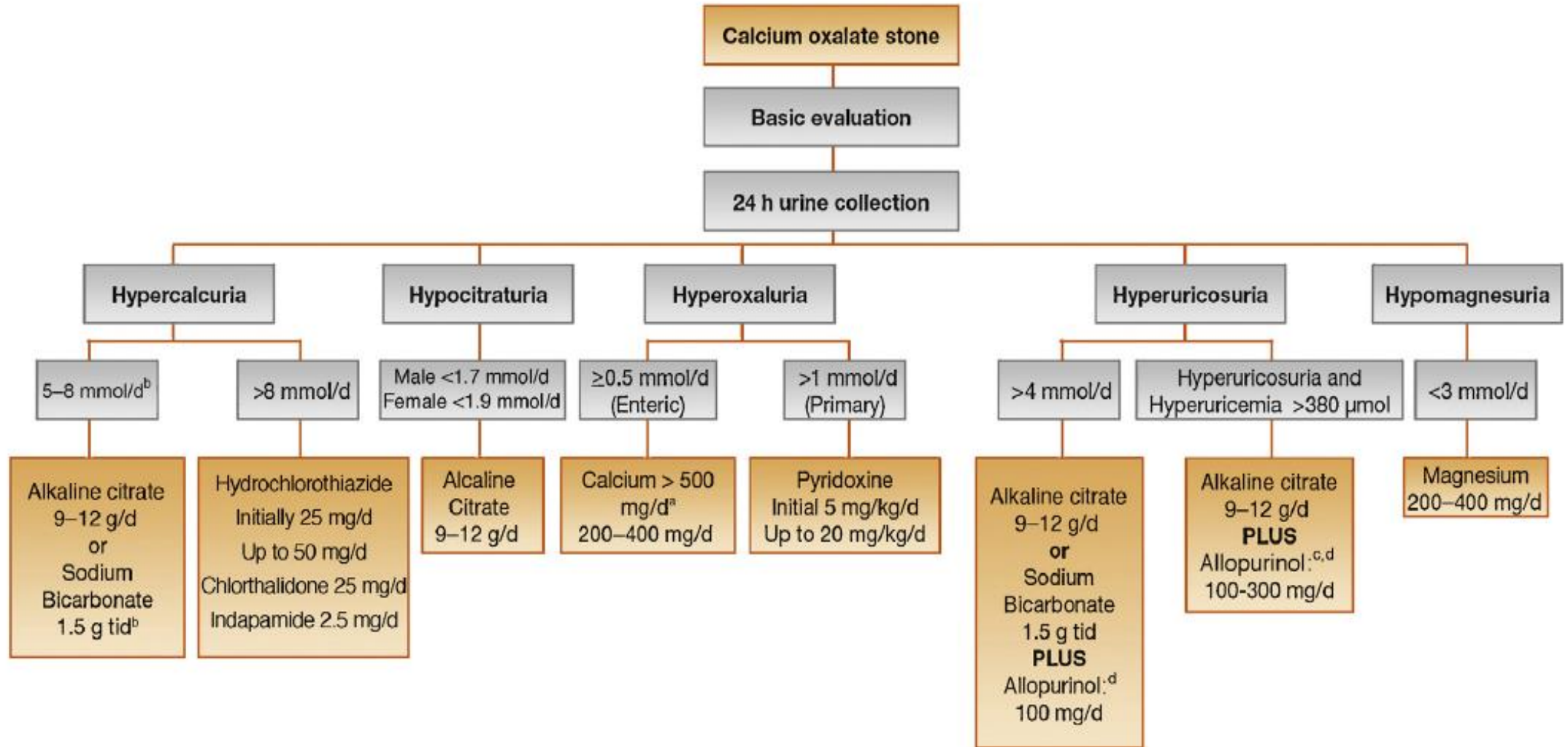


Estudo bioquímico completo

Agent	Rationale	Dose	Specifics and side effects	Stone type
Alkaline citrates	Alkalinization Hypocitraturia Inhibition of calcium oxalate crystallization	5–12 g/d (14–36 mmol/d) Children: 0.1–0.15 g/kg bw/d	Daily dose for alkalinization depends on urine pH	Calcium oxalate Uric acid Cystine
Allopurinol	Hyperuricosuria Hyperuricemia	100–300 mg/d Children: 1–3 mg/kg bw/d	100 mg in isolated hyperuricosuria Renal insufficiency demands dose correction	Calcium oxalate Uric acid Ammonium urate 2,8-Dihydroxyadenine
Calcium	Enteric hyperoxaluria	500 mg/d	Intake 30 min before meals	Calcium oxalate
L-Methionine	Acidification	600–1500 mg/d		Infection stones Ammonium urate Calcium phosphate
Magnesium	Isolated hypomagnesiuria Enteric hyperoxaluria	200–400 mg/d Children: 6 mg/kg bw/d	Renal insufficiency demands dose correction	Calcium oxalate
Sodium bicarbonate	Alkalinization Hypocitraturia	4.5 g/d		Calcium oxalate Uric acid Cystine
Pyridoxine	Primary hyperoxaluria	Initial dose 5 mg/kg bw/d Maximum dose 20 mg/kg bw/d	Polyneuropathia	Calcium oxalate
Thiazide (hydrochlorothiazide)	Hypercalciuria	25–50 mg/d Children: 0.5–1 mg/kg bw/d	Hypotonic blood pressure Risk of agent-induced diabetes Risk of agent-induced hyperuricemia	Calcium oxalate Calcium phosphate
Tiopronin	Cystinuria Active decrease in urinary cystine levels	Initial dose 250 mg/d Maximum dose 2000 mg/d	Risk of tachyphylaxia and proteinuria	Cystine

bw = body weight.

Estudo bioquímico completo



Roteiro

ETIOLOGIA, EPIDEMIOLOGIA E PATOGÊNESE

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TRATAMENTO MÉDICO

Cólica renal simples

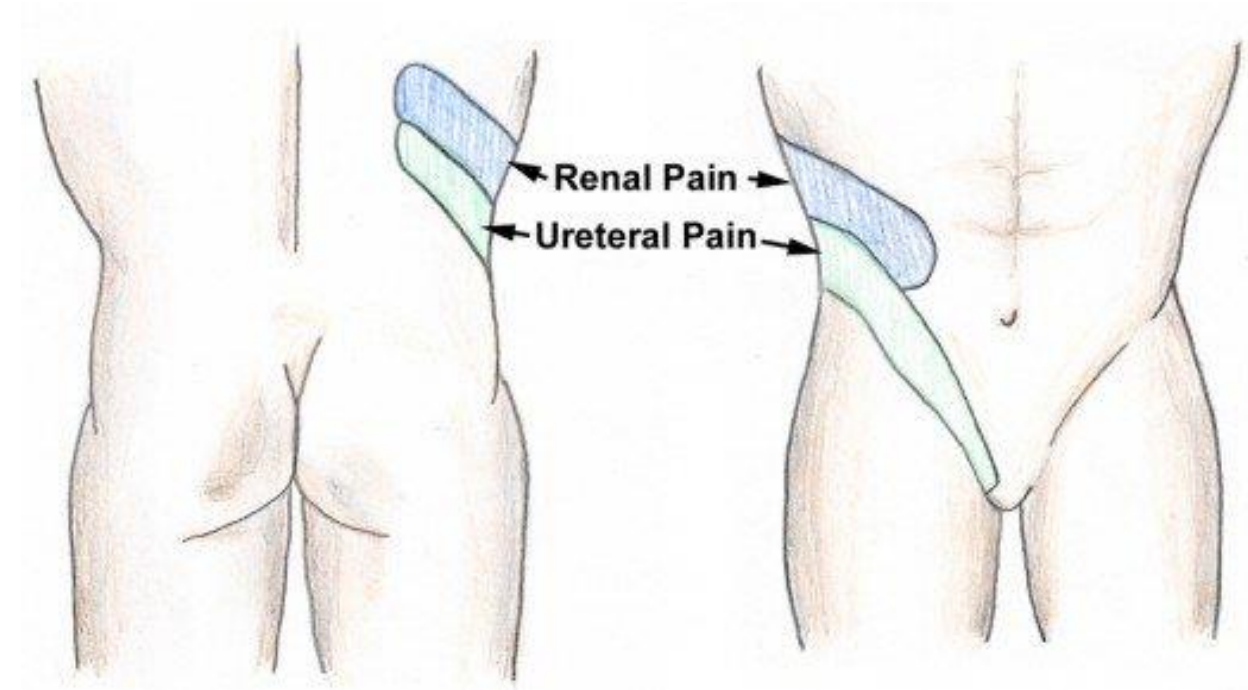
Quimólise/profilaxia

Microlitíase assintomática

TAKE-HOME MESSAGES

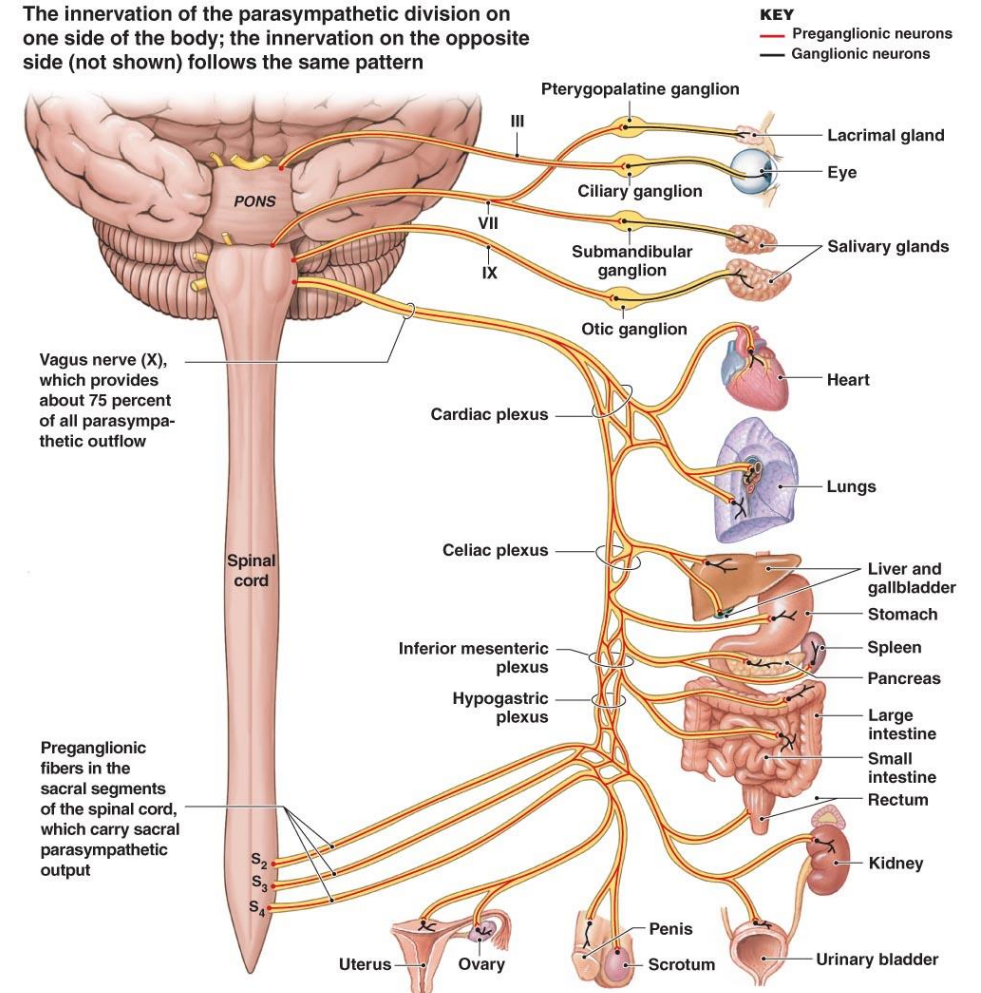
Cólica renal simples

- Cólica renal
 - Obstrução à passagem livre de urina
- Clínica
 - Dor - cólica - distensão do excretor
 - constante - cápsula renal
 - LUTS de armazenamento
 - Dor inguino-escrotal



Cólica renal simples

- Cólica renal
 - Obstrução à passagem livre de urina
- Clínica
 - Dor - cólica - distensão do excretor
 - - constante - cápsula renal
 - LUTS de armazenamento
 - Dor inguino-escrotal
 - Náuseas e vômitos



Cólica renal simples

- Cólica renal
 - Obstrução à passagem livre de urina
- Clínica
 - Dor - cólica - distensão do excretor
 - constante - cápsula renal
 - LUTS de armazenamento
 - Dor inguino-escrotal
 - Náuseas e vômitos
 - Hematúria (microscópica)



Cólica renal simples

- Cólica renal
 - Obstrução à passagem livre de urina
- Clínica
 - Dor - cólica - distensão do excretor
 - constante - cápsula renal
 - LUTS de armazenamento
 - Dor inguino-escrotal
 - Náuseas e vômitos
 - Hematúria (microscópica)
- Exame físico
 - Murphy renal
 - Exame testicular normal



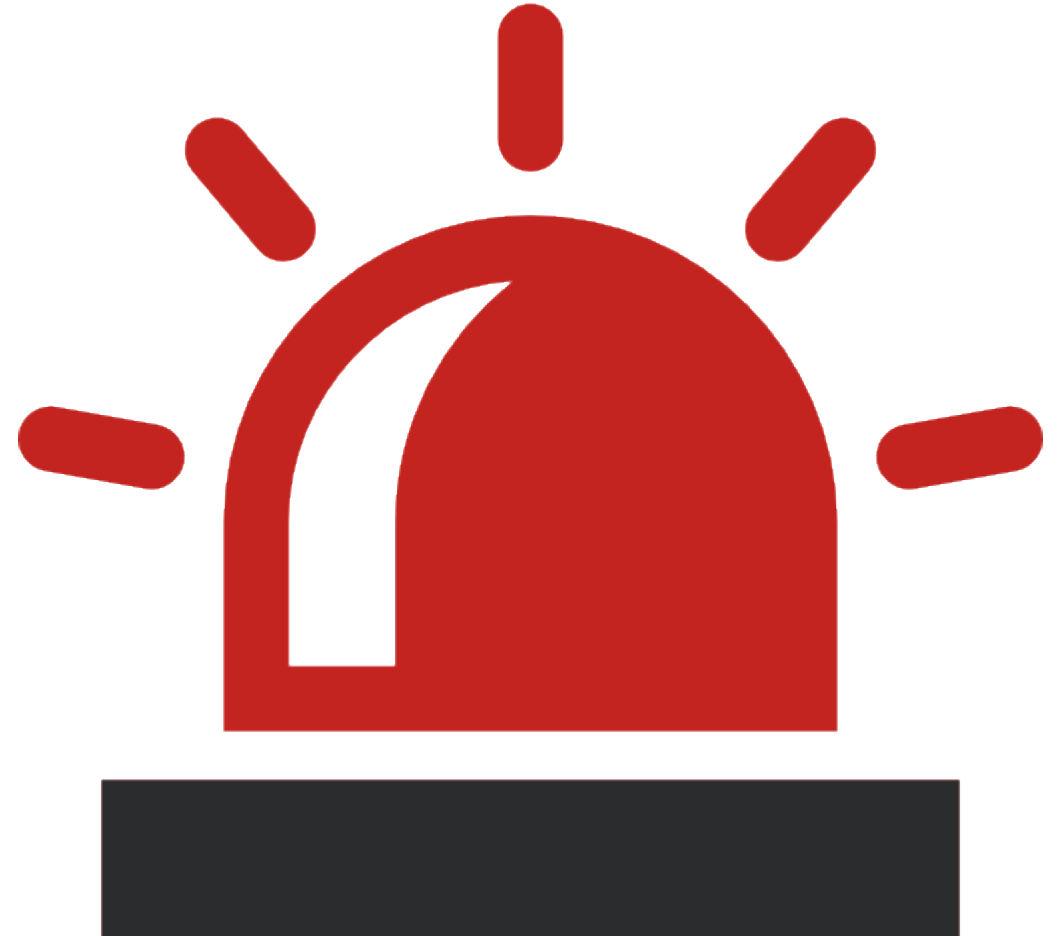
Cólica renal simples

- Exames de diagnóstico
 - Hemograma
 - Creatinina, BUN, Na⁺, K⁺
 - PCR
 - Imagem
 - Ecografia + Radiografia aparelho urinário / UroTC
- Nota
 - Ausência de sinais de alarme e doente sem comorbidades relevantes → não carece de ECDg
 - Radiografia renovesical é o mais relevante



Cólica renal simples

- Referenciação para a urgência
 - Febre
 - Oligoanúria
 - Cólica com mais de 2 semanas



Cólica renal simples

Delivering safe and effective analgesia for management of renal colic in the emergency department: a double-blind, multigroup, randomised controlled trial

Sameer A Pathan, Biswadev Mitra, Lahn D Straney, Muhammad Shuaib Afzal, Shahzad Anjum, Dharmesh Shukla, Kostantinos Morley, Shatha A Al Hilli, Khalid Al Rumaihi, Stephen H Thomas, Peter A Cameron

www.thelancet.com Published online March 15, 2016 [http://dx.doi.org/10.1016/S0140-6736\(16\)00652-8](http://dx.doi.org/10.1016/S0140-6736(16)00652-8)

Interpretation Intramuscular non-steroidal anti-inflammatory drugs offer the most effective sustained analgesia for renal colic in the emergency department and seem to have fewer side-effects.

Os AINEs são a terapêutica analgésica de eleição na cólica renal

Cólica renal simples

Unilateral obstruction

\uparrow RBF: \downarrow R_{afferent}
 \sim GFR: \uparrow P_{tubule} \downarrow R_{afferent}

Changes mediated by increase in vasodilators: NO, PGE_2

Acute phase
1-2 hours

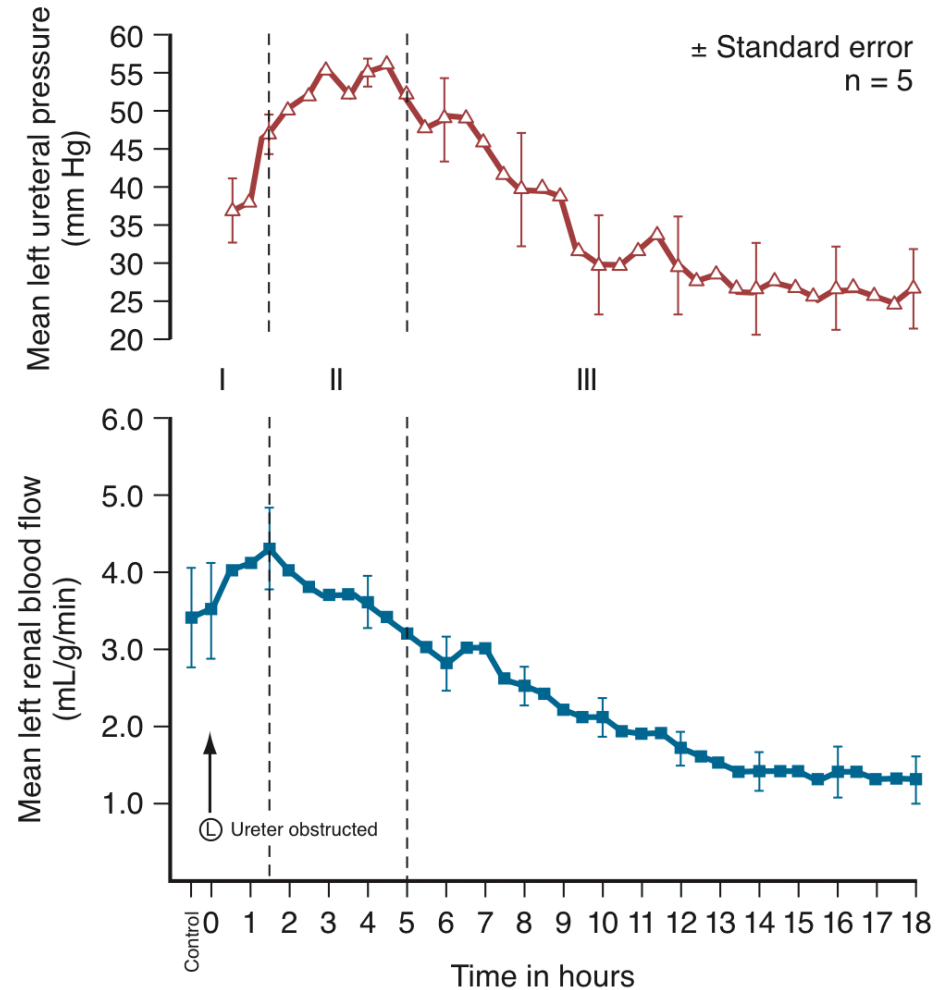
\downarrow RBF: \uparrow R_{afferent}
 \downarrow GFR: \uparrow P_{tubule} \uparrow R_{afferent}

Mid phase
2-5 hours

\downarrow RBF: \uparrow R_{afferent}
 \downarrow GFR: \downarrow P_{tubule} \uparrow R_{afferent}

Late phase
24 hours

Changes mediated by decrease in NO



Cólica renal simples

REVIEW

Update on medical expulsive therapy for distal ureteral stones: Beyond alpha-blockers

Derek Bos, MD; Anil Kapoor, MD, FRCSC

Division of Urology, Department of Surgery, McMaster University, Hamilton, ON

- Alfa-bloqueantes – fundamental
 - Corticóides como adjuvantes?
- BCC – resultados inferiores

Cite as: *Can Urol Assoc J* 2014;8(11-12):442-5. <http://dx.doi.org/10.5489/cuaj.2472>
Published online December 15, 2014.

Conclusion

Current best practice guidelines recommend alpha-blockers as a conservative management option in the treatment of distal ureteral stones. Corticosteroid therapy as an adjunct to alpha-blocker therapy, may be effective in improving expulsion rates. Evidence regarding the practice of corticosteroids as a monotherapy for distal ureteral stones remains insufficient. Calcium channel blockers have shown promise, but outcomes remain inferior to alpha-blockers. PDE5 inhibitors have recently been explored, yielding non-significant results. Future studies may look to further validate the use of corticosteroids as an adjunct in stone expulsion, as well as to investigate the efficacy of PDE5 inhibitors.

Cólica renal simples

- Orientação

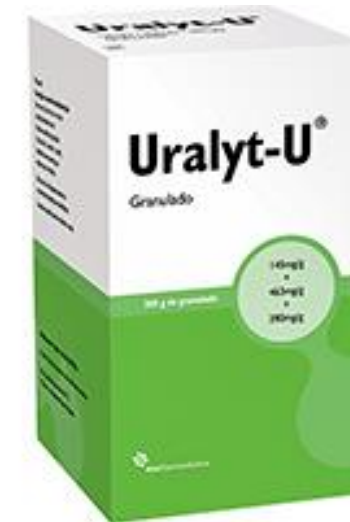
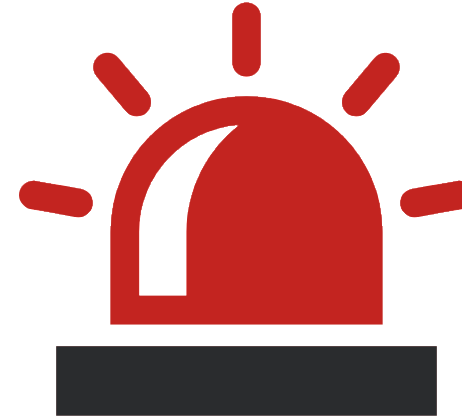
- Referenciação para a urgência
 - Febre
 - Oligoanúria
 - Cólica com mais de 2 semanas

- Terapêutica médica

- Dupla analgesia
- Alfa-bloqueante
- Alcalinizante?

- Orientação

- 2 semanas - ecografia e/ou Rx
- 2 meses - estudo bioquímico básico



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Cólica renal simples

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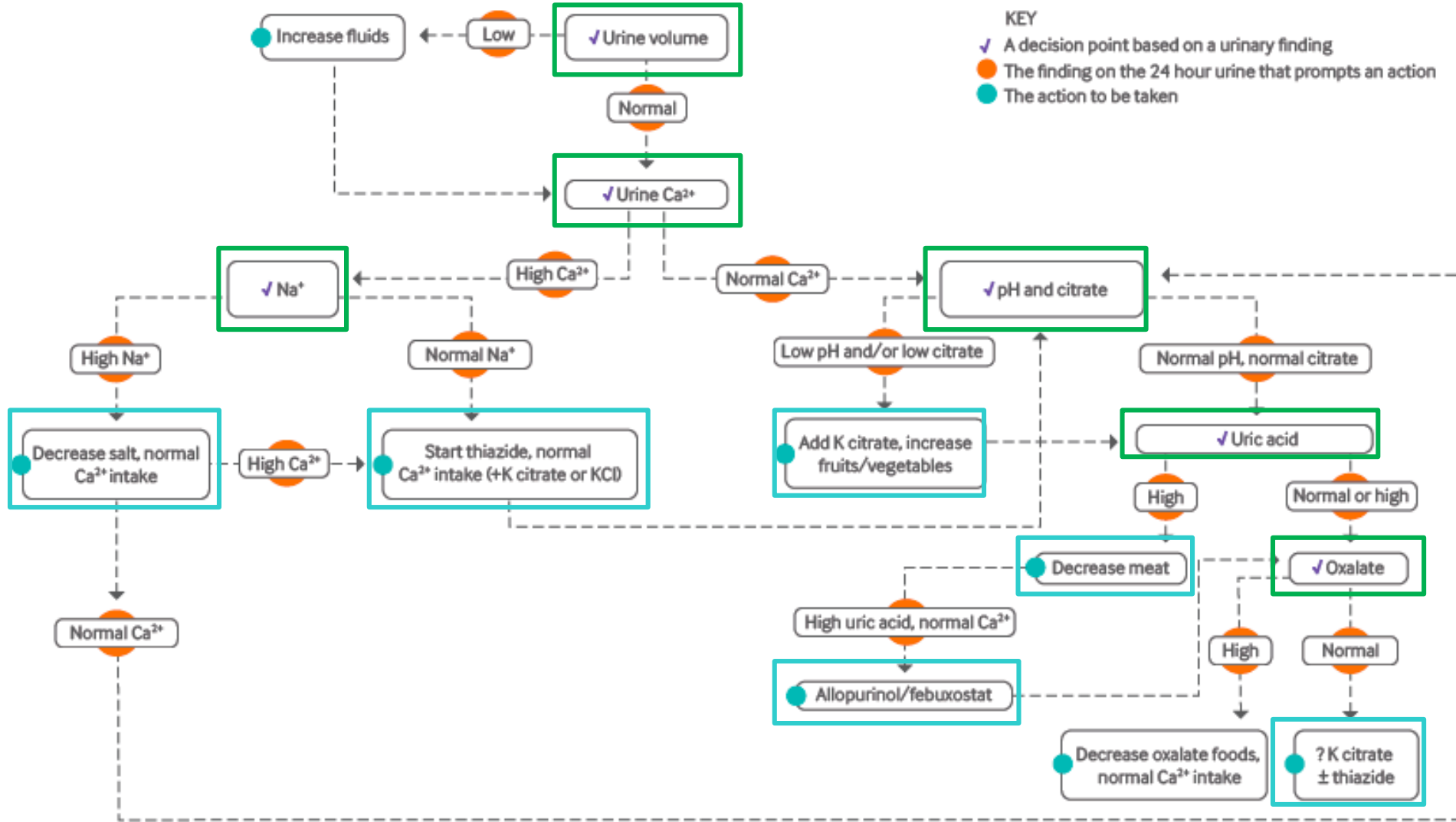
Microlitíase assintomática

TAKE-HOME MESSAGES

Quimólise/profilaxia

Medical management of renal stones

Monica S C Morgan, Margaret S Pearle



Avaliação:

- Volume
- Cálcio
- Sódio
- pH
- Citrato
- Ac úrico
- Oxalatos

Intervenção

- ↑ água
- ↑ Frutas/vegetais
- ↓ Na⁺
- ↓ carnes
- Citrato K⁺
- Alopurinol

Quimólise/profilaxia

Oral dissolution therapy for radiolucent kidney stones. An old treatment revisited

M Alsinnawi, Z Maan and GH Rix

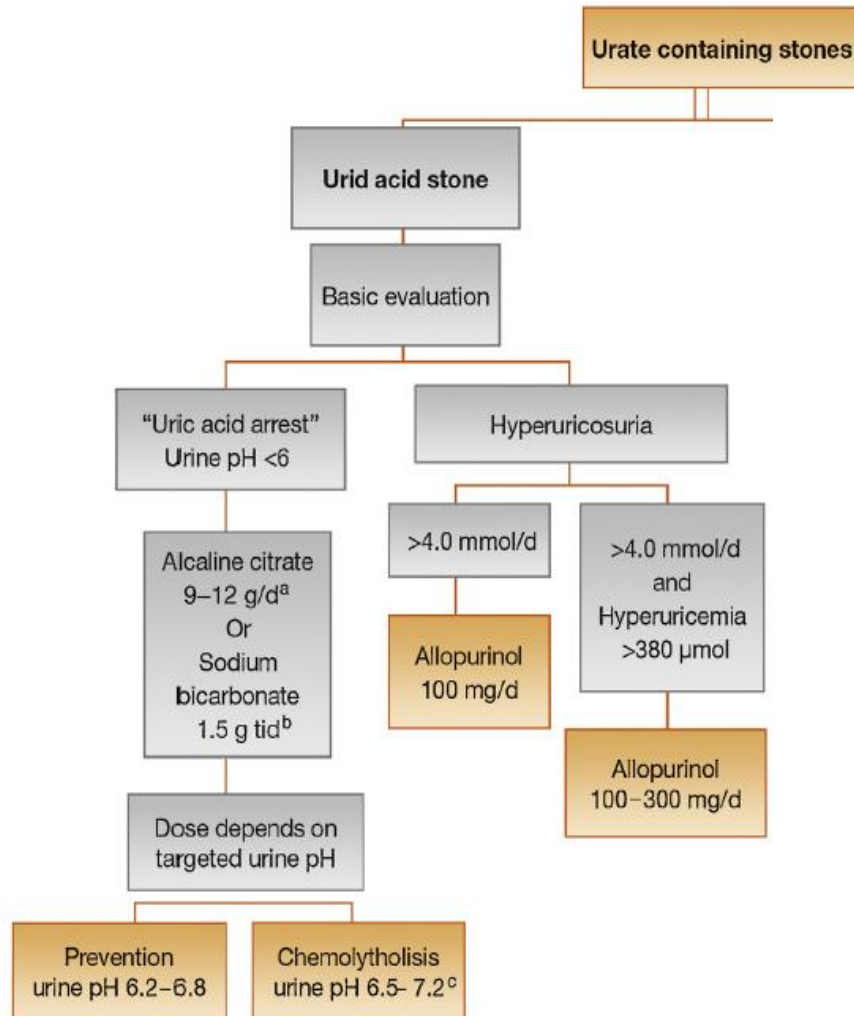
Journal of Clinical Urology
2016, Vol. 9(4) 268–273

2g 3id a 5id

Titular pelo pH urinário – 6 a 7

Study/year	Patient number	Regime and endpoint imaging	Results
Sinha et al. ⁵ , 2013, retrospective	48	<ul style="list-style-type: none">• K, Mg and citrate• U/S• 103.6±89 days	<ul style="list-style-type: none">• Complete dissolution: 15% (10/48)• Partial dissolution: 19% (13/48)
Trinchieri et al. ¹⁸ , 2009, prospective	8	<ul style="list-style-type: none">• Oral K citrate and K bicarbonate• U/S or CT KUB• 6 weeks, up to 6 months in partial responders	<ul style="list-style-type: none">• Complete dissolution: 37.5% (3/8)• Partial dissolution: 62.5% (5/8)• Further 2 of the partial responders had complete dissolution at 6 months
Honda et al. ¹⁹ , 2003 (article in Japanese)	15	<ul style="list-style-type: none">• Potassium Sodium Hydrogen Citrate	<ul style="list-style-type: none">• Complete dissolution in 73.3% (11/15) treated with oral chemolysis alone
Moran et al. ²⁰ , 2002, prospective	11 (previous surgical intervention)	<ul style="list-style-type: none">• K citrate• Mainly CT KUB• 6 weeks	<ul style="list-style-type: none">• Complete dissolution: 73%
Sharma and Indudhara ²¹ , 1992, retrospective	23	<ul style="list-style-type: none">• Oral sodium bicarbonate.• 6 months to 4 years• Mainly U/S	<ul style="list-style-type: none">• Complete dissolution: 78% (18/23)• One developed calcified stones being on alkali therapy
Petritsch ¹³ , 1977, retrospective	140	<ul style="list-style-type: none">• Na + K citrate and citric acid• At least 6 to 8 weeks• IVU	<ul style="list-style-type: none">• Complete dissolution 80%

Quimólise/profilaxia



Cálculos de ácido úrico (radiotransparentes) devem ser sujeitos a um ciclo de tratamento com citrato K+

pH alvo 6 - 7

O doseamento do pH e dos uratos na urina das 24 horas permite fazer profilaxia

Quimólise/profilaxia

- Em doentes sem insuficiência renal, a quimioprofilaxia com citrato é benéfica
 - Na litíase de oxalato de cálcio reduz as recidivas
 - Cuidado nas de fosfato de cálcio
 - Na litíase radiotransparente pode e deve ser tentado um ciclo de quimólise oral
 - Avaliar o pH da urina
- Qual o fármaco a usar
 - Acalka[®] – Citrato de sódio e potássio em comprimido
 - Uralyt-U[®] – Citrato de potássio
 - Lithos[®] – Citrato de potássio e magnésio



Roteiro

ETIOLOGIA, EPIDEMIOLOGIA E PATOGÊNESE

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Microlitíase assintomática

TAKE-HOME MESSAGES

Microlitíase assintomática

O que fazer com um doente com microlitíase assintomática?

Limitations to Ultrasound in the Detection and Measurement of Urinary Tract

A. Andrew Ray, Daniela Ghiculete, Kenneth T. Pace, and P

UROLOGY 76: 295–300, 2010. © 2010 Elsevier

CONCLUSIONS

US overestimates

management

mm.

that may have implications for stone management. The difference varies with size and is greatest in stones ≤ 5 mm.

Stone Size	(mm)	Difference (mm)	P
All stones (N = 70)	9.2 ± 4.5	1.8 ± 2.3	.018
≤5 mm (N = 25)	5.7 ± 1.3	1.9 ± 1.2	<.001
5.1-10 mm (N = 30)	8.4 ± 1.7	1.6 ± 1.7	<.001
>10 mm (N = 16)	16.4 ± 3.6	2.2 ± 4.0	.051

Stone size was initially stratified by measurement using magnified soft-tissue windows.

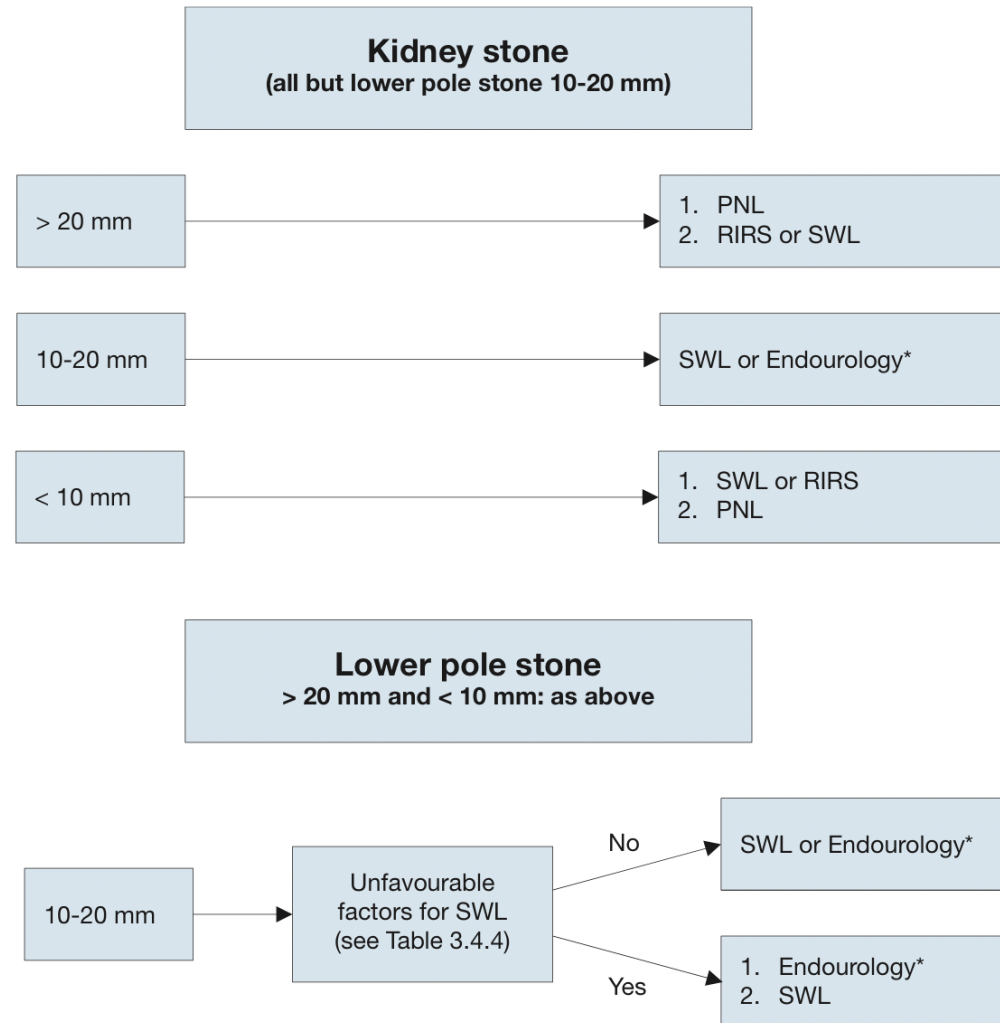
Data are presented as mean ± SD.

Fazer sempre uma radiografia do aparelho urinário

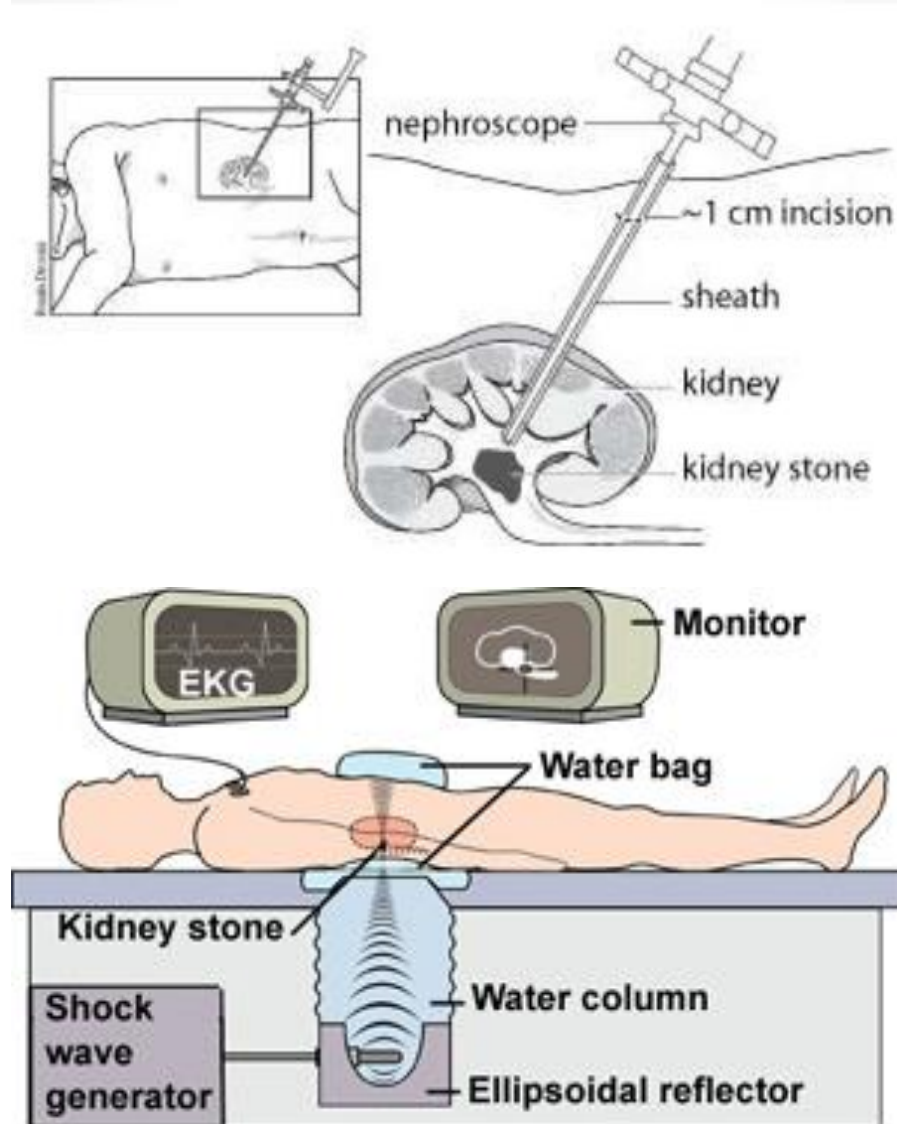
Microlitíase assintomática

Guidelines EAU

Figure 3.4.1: Treatment algorithm for renal calculi



Microlitíase assintomática



Microlitíase assintomática

Preliminary results of a randomized controlled trial of prophylactic shock wave lithotripsy for small asymptomatic renal calyceal stones

F.X. KEELEY Jr, K. TILLING*, A. ELVES, P. MENEZES, M. WILLS, N. RAO† and R. FENELEY

BJU International (2001), **87**, 1–8

Variable	Observation n = 99, n (%)	ESWL n = 101, n (%)	OR* (95% CI)	P	Adjusted OR (95% CI)	Adjusted P
Stone-free	16 (17)	28 (28)	1.95 (0.97–3.89)	0.06	1.58 (0.68–3.67)	0.29
LRF	56 (58)	29 (30)	0.30 (0.17–0.55)	0.0001	0.26 (0.12–0.57)	0.001
Improved KUB	27 (28)	43 (44)	2.03 (1.12–3.69)	0.019	2.16 (1.09–4.24)	0.026
Visited GP	24 (24)	21 (21)	0.84 (0.43–1.64)	0.61	0.98 (0.45–2.11)	0.95
Requirement for additional treatment	21 (21)	15 (15)	0.66 (0.32–1.37)	0.27	0.61 (0.27–1.40)	0.25
Prescribed analgesics	17 (17)	8 (8)	0.41 (0.17–1.01)	0.05	0.57 (0.21–1.53)	0.27

Não melhora:

- Stone free
- Qualidade de vida
- Função
- Sintomas
- Procura de cuidados de saúde

Poderá aumentar a necessidade de tratamentos mais invasivos

Microlitíase assintomática

When (and how) to surgically treat asymptomatic renal stones

Zachariah G. Goldsmith and Michael E. Lipkin

Table 1 | Observation of asymptomatic or residual stones

Study	n	Mean stone size (mm)	Outcome (%)				
			Overall progression	Stone passage	Symptoms	Size increase	Intervention
<i>Asymptomatic</i>							
Glowacki et al. (1992) ¹⁰	107	NR	NR	15	32	NR	17
Burgher et al. (2004) ¹¹	200	10.8	77	NR	NR	NR	20
Koh et al. (2005) ¹²	100	10.0	77	NR	NR	NR	20
Inci et al. (2006) ¹³	100	10.0	77	NR	NR	NR	20
<i>After PNL</i>							
Raman et al. (2009) ¹⁷	42	NR	43	NR	NR	NR	26
Ganpule et al. (2009) ¹⁸	187	NR	NR	45	NR	NR	NR
<i>After URS</i>							
Rebuck et al. (2011) ¹⁹	46	NR	NR	22	20	NR	NR

*Prospective studies. Abbreviations: NR, not reported; PNL, percutaneous nephrolithotomy; SWL, shock wave lithotripsy; URS, ureteroscopy.

Key points

- The prevalence of asymptomatic stones identified in screened populations is 8–10%, and is likely to grow with increased CT utilization
- Outcomes of asymptomatic stones <10 mm in diameter include a symptomatic stone event (13–32%), spontaneous passage (13–20%), size increase (30–46%) and intervention (7–26%)

Com o aumento do diâmetro aumenta o risco de sintomas e de progressão

Microlitíase (<8mm) radiopaca assintomática não obstrutiva:

- Profilaxia (secundária)
 - Hidratação; Dieta
 - Citrato?
 - Alupurinol?
- Vigilância
 - Ecografia e Rx renovesical

Microlitíase radiotransparente

- Quimólise

Em caso de progressão ou sintomas - referência

Roteiro

ETIOLOGIA, EPIDEMIOLOGIA E PATOGÊNESE

AVALIAÇÃO

Avaliação básica

TRATAMENTO MÉDICO

Cólica renal simples

Quimólise/profilaxia

Microlitíase assintomática

TAKE-HOME MESSAGES

Take-home messages

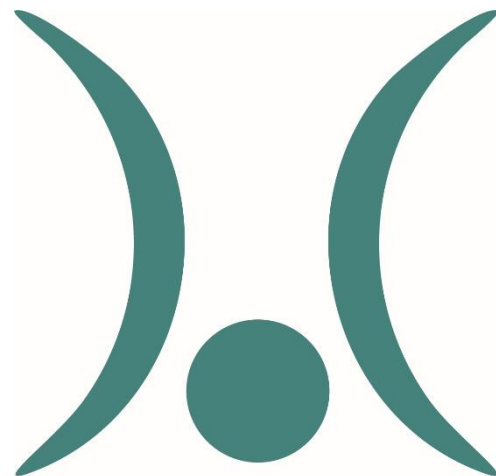
- A litíase urinária como efeito do síndrome metabólico
- Todos os doentes devem fazer um estudo bioquímico básico
- Cólica renal simples em doentes sem co-morbilidades relevantes não carece de avaliação pelo urologista
- A litíase radiotransparente deve ser sujeita a um ciclo de alcalinização da urina – 6 meses
- Microlitíase (<8mm) radiopaca, não obstrutiva e assintomática
- Consulta de urologia
 - Cálculos >8mm radiopacos ou radiotransparentes refractários à alcalinização
 - Doentes de alto risco

Obrigado pela vossa atenção



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