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Refeeding Syndrom

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Sektion Ernährungsmedizin
Klinik für Innere Medizin I

Literatur

Beispiele

The Refeeding Syndrome: a neglected but potentially serious condition for inpatients. A narrative review

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Refeeding syndrome in the frail elderly population: prevention, diagnosis and management Emilie Aubry1 Natalie Friedli2 Philipp Schuetz2 Zeno Stanga1 1 Department for Diabetes, Endocrinology, Nutritional Medicine and Metabolism, Bern University Hospital and University of Bern, Bern, Switzerland; 2 Medical University Department, Clinic for Endocrinology, Diabetes, Metabolism and Clinical Nutrition, Kantonsspital Aarau, and Medical Faculty of the University of Basel, Basel, Switzerland

Definition

Erkrankung, bei Wechsel von katabolem nach anabolem Stoffwechsel

-Elektrolytstörung (insbes. Phopsphat), Ödeme (z.B. Pleuraerguss), Organdysfunktion

-Bei Wieder-Ernährung, nach längerer Zeit von Mangelernährung,

Symptome: 2-5 Tage nach Start Ernährung

Häufigkeit: oft übersehen; Definition nicht immer klar; bei 30%?

Meist: Tumor Patienten, rezidiv. Erbrechen, ältere Patienten, Störung Schlucken, gestörte Magendarmfuktion;

ausgeprägt bei Anorexia nervosa

Je länger wenig essen , je niedriger Gewicht, um so höher Risiko

Entstehung

vereinfacht

Hunger:

-wenig Glucose, wenig Insulin

-mehr Glucagon: Glycogenolyse Leber

-Aminosäuren aus Muskulatur

-Lipolyse

-Verlust intracellulärer Elektrolyte, insbes. **Phosphat, K, Mg, und Thiamin**

aber im Serum Werte normal (evtl. Leukopenie, Anämie)

„Feeding“, künstl. Ernährung:

Mehr Insulin: -Produktion ATP,

mehr intracellulärer Bedarf PO4, K, Mg, Thiamin: Abfall im Serum

-Na Retention: Flüssigkeitsüberladung

Folge: Ödeme, cardiale, respiratorische Insuffizienz, neurolog. Störung

Beachten bei künstlicher Ernährung

Bei länger bestehender Mangelernährung:
Risiko für Refeeding mit Ödemen und Elektrolytstörung, deshalb:

Thiamin initial und
Multivitamine -nicht vergessen!
Vorsichtig dosierte Kalorienmenge und Volumen und
schrittweise steigern
unter Kontrolle Elektrolyte mit K, Na,Phosphat, Mg
und ggf Subsitution

Ausführlicher s.u.

Prophylaxe, Therapie

Vereinfachte Empfehlung, bei V.a. Mangelernährung

Start mit :*Thiamin 100 mg/Tag i.v*, für 3-10Tage; (oder *oral Betabion*)

Cernevit, Addel trace1Ampiv (oder oral *Multivitamine A-Z, z.B. Centrum*)

und

Parenteral: ca 700kcal für 2-3 Tage (z.B. *1l Olimel 2.5%* l, oder 0.7l höherkalorische Lösung, (weniger bei extrem niedrigem Gewicht, <40kg)
(langfristig zusätzl zu A, C: Konakion 1x/Woche)

oder

Enteral: 3xtägl 100ml Sondenkost (*z.B. Isosource protein fibre*)

Kontrolle: Na, K, Mg, PO4, Ca, Glucose, Hst, Krea (BB, Albumin)
Gewicht , AZ, Ödeme?, Dyspnoe?

Substitution Phosphat (iv ab <0.6 mmol /l
(1Amp.*K-Phosphat in 12-24h iv oder oral Redukto spezial 3x2/ T.*)

Dann **Kcal schrittweise steigern** , Ziel nach 10 Tagen 30-35kcal/kg

Table 5 Prevention and treatment of the RFS according to the risk, d 1-5

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Day	Treatment	Low risk	High risk	Very high risk	Monitoring
1	Thiamine	200–300 mg	200–300 mg	200–300 mg	Body weight
	Multivitamin*	Yes	Yes	Yes	Vital signs
	Sodium restriction	No	< 1 mmol/kg/day	< 1 mmol/kg/day	Clin Exam
	Fluids	30–35 ml/kg/day	25–30 ml/kg/day	20–25 ml/kg/day	Lab tests§
	Nutritional support**	15–25 kcal/kg/day	10–15 kcal/kg/day	5–10 kcal/kg/day	
2	Thiamine	200–300 mg	200–300 mg	200–300 mg	Body weight
	Multivitamin*	Yes	Yes	Yes	Vital signs
	Sodium restriction	No	< 1 mmol/kg/day	< 1 mmol/kg/day	Clin Exam
	Fluids	30–35 ml/kg/day	25–30 ml/kg/day	20–25 ml/kg/day	Lab tests§
	Nutritional support**	15–25 kcal/kg/day	10–15 kcal/kg/day	5–10 kcal/kg/day	
3	Thiamine	200–300 mg	200–300 mg	200–300 mg	Body weight
	Multivitamin*	Yes	Yes	Yes	Vital signs
	Sodium restriction	No	< 1 mmol/kg/day	< 1 mmol/kg/day	Clin Exam
	Fluids	30–35 ml/kg/day	25–30 ml/kg/day	20–25 ml/kg/day	Lab tests§
	Nutritional support**	15–25 kcal/kg/day	10–15 kcal/kg/day	5–10 kcal/kg/day	
4	Thiamine	No	No	200–300 mg	Vital signs
	Multivitamin*	Yes	Yes	Yes	Clin Exam
	Sodium restriction	No	< 1 mmol/kg/day	< 1 mmol/kg/day	
	Fluids	30–35 ml/kg/day	30–35 ml/kg/day	25–30 ml/kg/day	
	Nutritional support**	30 kcal/kg/day	15–25 kcal/kg/day	10–20 kcal/kg/day	
5	Thiamine	No	No	200–300 mg	Body weight
	Multivitamin*	Yes	Yes	Yes	Vital signs
	Sodium restriction	No	< 1 mmol/kg/day	< 1 mmol/kg/day	Clin Exam
	Fluids	30–35 ml/kg/day	30–35 ml/kg/day	25–30 ml/kg/day	Lab tests§
	Nutritional support**	full requirements	15–25 kcal/kg/day	10–20 kcal/kg/day	

Prevention and treatment of the RFS according to the risk , d 6-10

	Nutritional support**	full requirements	15–25 kcal/kg/day	10–20 kcal/kg/day	
6	Multivitamin*	Yes	Yes	Yes	Vital signs
	Sodium restriction	No	<1 mmol/kg/day	<1 mmol/kg/day	Clin Exam
	Fluids	30–35 ml/kg/day	30–35 ml/kg/day	25–30 ml/kg/day	
	Nutritional support**	full requirements	25–30 kcal/kg/day	10–20 kcal/kg/day	
7	Multivitamin*	Yes	Yes	Yes	Vital signs
	Sodium restriction	No	<1 mmol/kg/day	<1 mmol/kg/day	Clin Exam
	Fluids	30–35 ml/kg/day	30–35 ml/kg/day	30–35 ml/kg/day	
	Nutritional support**	full requirements	full requirements	20–30 kcal/kg/day	
8	Multivitamin*	Yes	Yes	Yes	Vital signs
	Sodium restriction	No	No	<1 mmol/kg/day	Clin Exam
	Fluids	30–35 ml/kg/day	30–35 ml/kg/day	30–35 ml/kg/day	
	Nutritional support**	full requirements	full requirements	20–30 kcal/kg/day	
9	Multivitamin*	Yes	Yes	Yes	Body weight
	Sodium restriction	No	No	<1 mmol/kg/day	Vital signs
	Fluids	30–35 ml/kg/day	30–35 ml/kg/day	30–35 ml/kg/day	Clin Exam
	Nutritional support**	Full requirements	Full requirements	20–30 kcal/kg/day	Lab tests§
10	Multivitamin*	Yes	Yes	Yes	Vital signs
	Sodium restriction	No	No	<1 mmol/kg/day	Clin Exam
	Fluids	30–35 ml/kg/day	30–35 ml/kg/day	30–35 ml/kg/day	
	Nutritional support**	Full requirements	Full requirements	Full requirements	

Clin Exam clinical examination

*Vitamins should be supplemented to 200% and the trace elements to 100% of the recommended daily intakes; replace electrolyte according to the electrolyte serum levels and RFS severity: 1–1.5 mmol/Kg/day potassium, 0.2–0.4 mmol/Kg/day magnesium, 0.3–0.6 mmol/Kg/day phosphate

**Provide 15–20% proteins, 30–40% carbohydrates, 40–60% fats

§Laboratory tests include phosphate, sodium, potassium, magnesium, calcium, glucose, creatinine, urea

Refeeding , Risiko Gruppen

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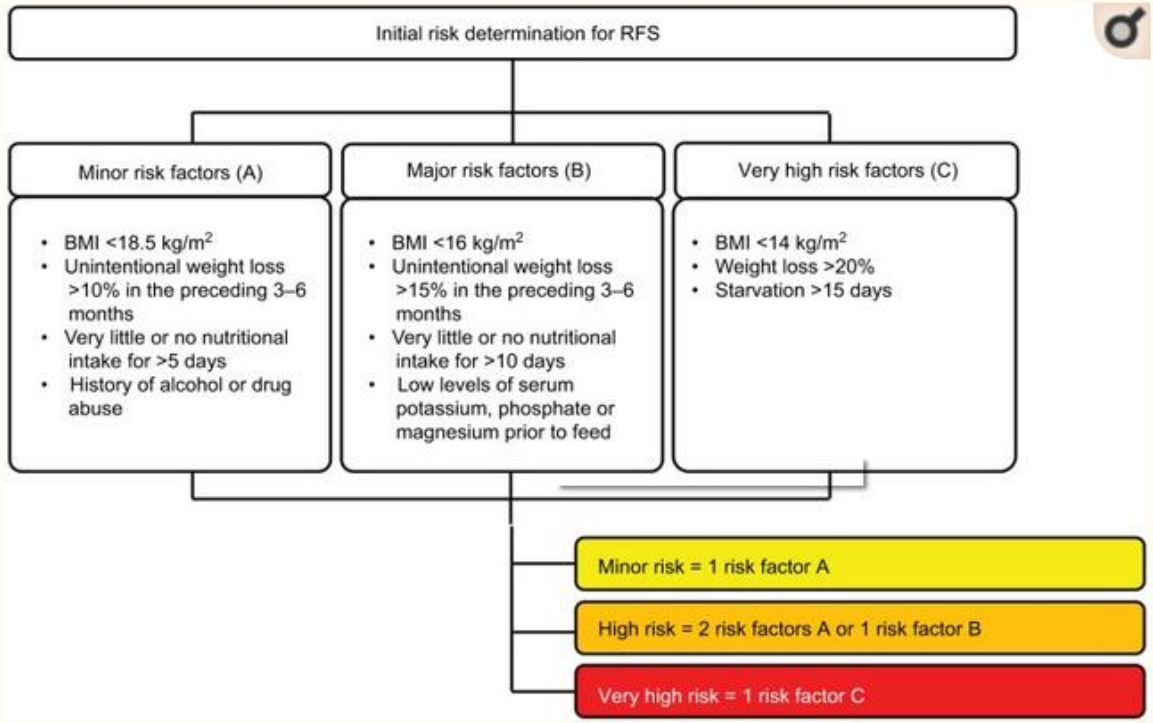

Figure 2

Identification of patients at risk for RFS.

Note: Used with permission of the Department of Diabetes, Endocrinology, Nutritional Medicine and Metabolism and is modified from Friedli et al42 and from National Institute for Health and Clinical Excellence (NICE).46

Abbreviations: RFS, refeeding syndrome; BMI, body mass index.

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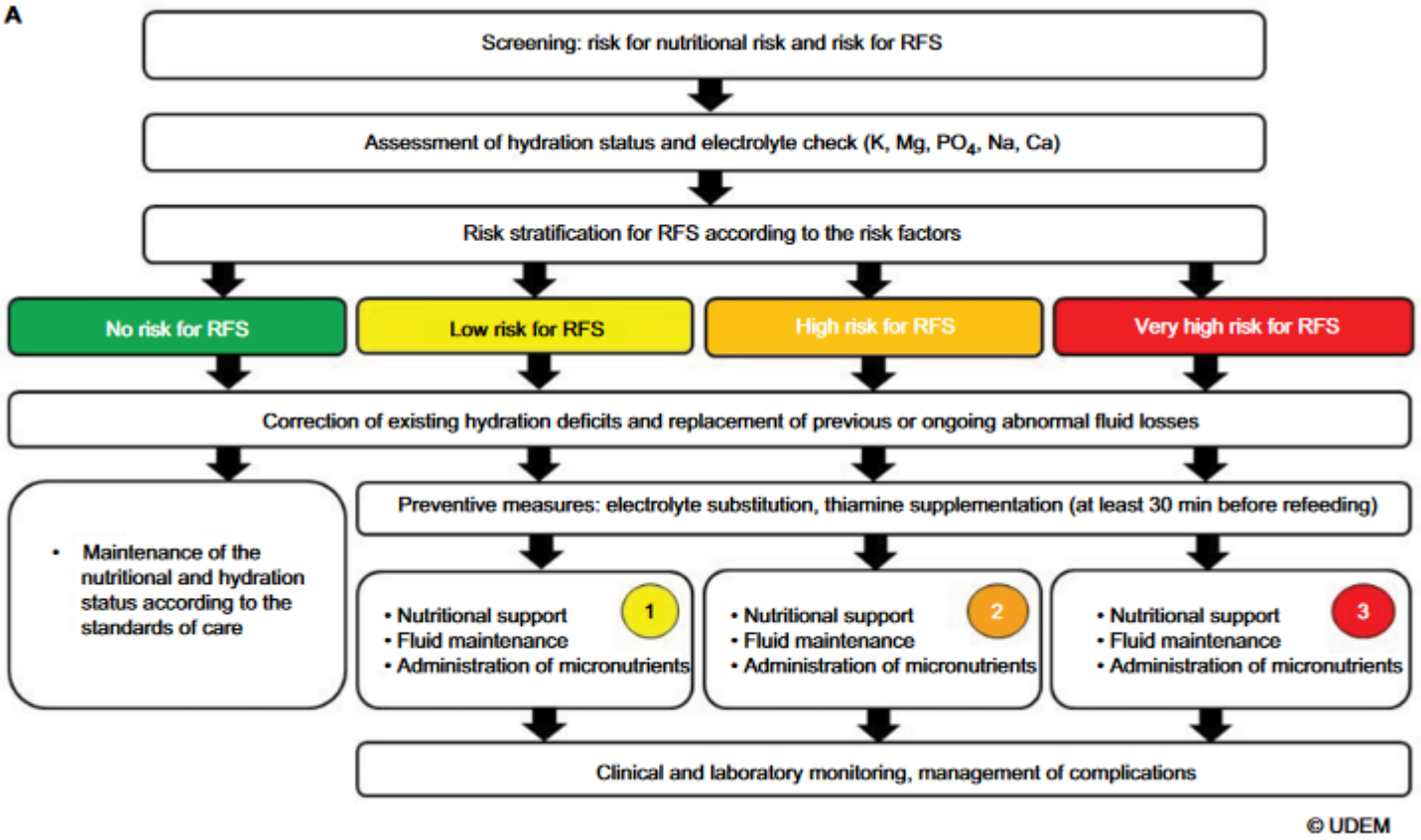

Therapiestrategie nach Risiko

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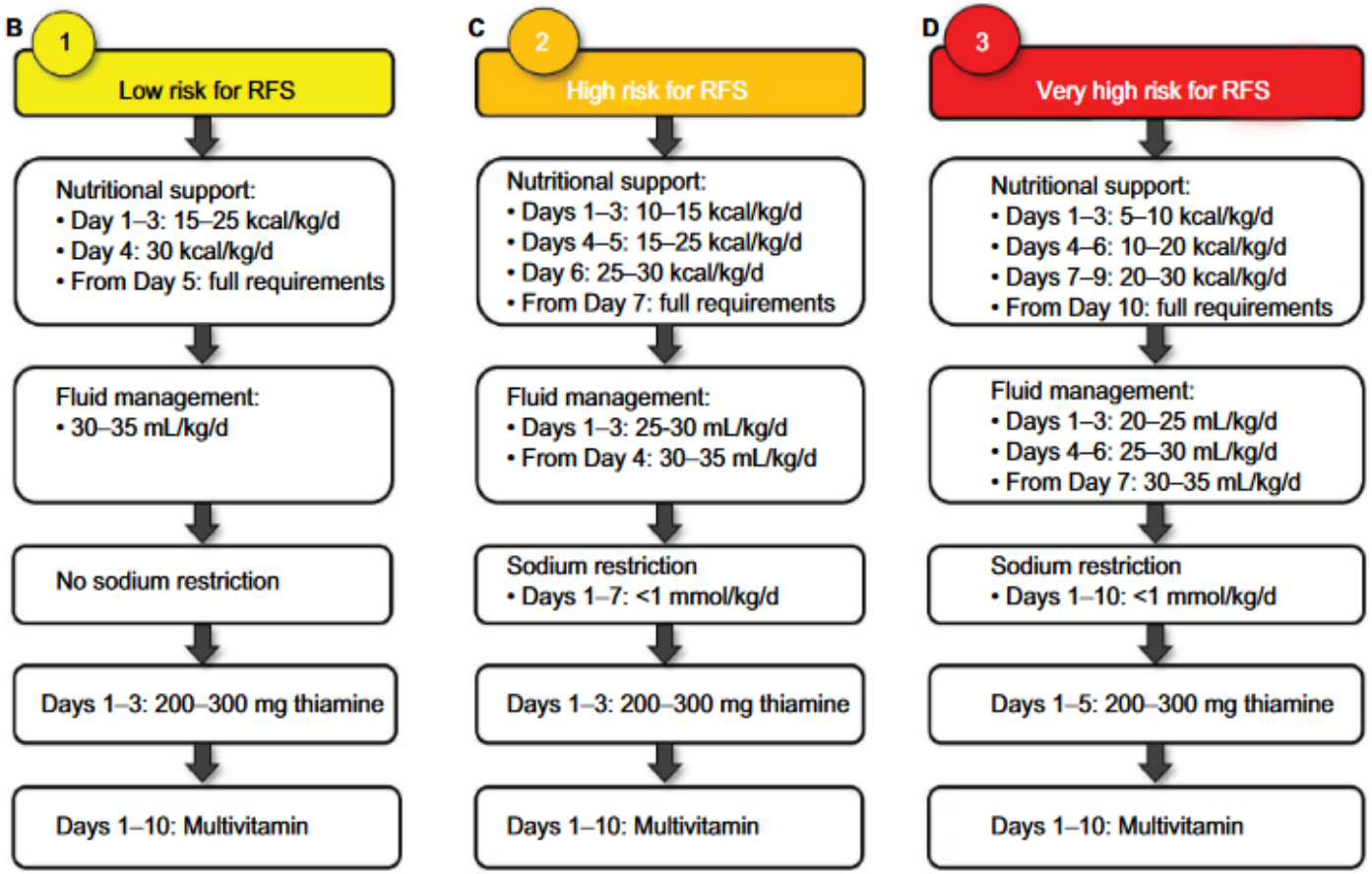

Figure 4 Management of nutritional therapy in patients at risk for RFS: (**A**) for patients of all risk categories; (**B**) for patients at low risk; (**C**) for patients at high risk; (**D**) for patients at very high risk.

Note: Used with permission of the Department of Diabetes, Endocrinology, Nutritional Medicine and Metabolism and is modified from Friedli et al.[41]

Abbreviation: RFS, refeeding syndrome.