THERAPIE DES CHRONISCHEN HYPOPARATHYROIDISMUS MITTELS rPTH1-84

PD. DR.K. AMREIN, MSc
HORMONINSTITUT DOBNIG, GRAZ
MEDUNI GRAZ, ENDOKRINOLOGIE & DIABETOLOGIE

HYPOPARA:

4

GROSSE

PROBLEME

AWARENESS

DIAGNOSE OFT VERZÖGERT

EMPATHY GAP

UNPHYSIOLOGISCHE BEHANDLUNG

Jesus NEJM 2012

The NEW ENGLAND JOURNAL of MEDICINE

IMAGES IN CLINICAL MEDICINE

Chvostek's and Trousseau's Signs

A 38-YEAR-OLD MAN PRESENTED TO THE EMERGENCY DEPARTMENT WITH

AWARENESS

Annals of Internal Medicine

ORIGINAL RESEARCH

Thyroidectomy Versus Medical Management for Euthyroid Patients With Hashimoto Disease and Persisting Symptoms

A Randomized Trial

Ivar Guldvog, MD, PhD; Laurens Cornelus Reitsma, M
Eivind Carlsen, MD; Tone Hoel Lende, MD; Jon Kristi
Geir Hoff, MD, PhD; Tomm Bernklev, PhD†; and Håv

Adverse Events, Surgical Complications, and Surgical Specimens

In the control group, 1 patient had a stroke and 1 patient died in a car accident (Figure 1). In the surgery group, 3 patients had postsurgical infections (4.1%), 1 of which was initiated by a 4-mm injury to the trachea and subcutaneous emphysema; the other 2 were wound infections. Three patients (4.1%) had long-standing hypocalcemia. No clinically relevant bleeding was observed. Four patients (5.5%) had unilateral recurrent laryngeal nerve palsy at examination 4 and 12 months after surgery. All 4 were followed by an ear, nose, and throat specialist for 12 months, and their voice quality improved either spontaneously or after training with a speech therapist.

An experienced pathologist examined all surgical specimens; histologically, they showed characteristic Hashimoto changes. Papillary cancer was diagnosed in 2 patients, 1 with an 8-mm lesion and 1 with several 1-mm lesions in both lobes.

Guldvog I AIM 2019

Durante C 2018

Clinical Review & Education

JAMA | Review

The Diagnosis and Management of Thyroid Nodules
A Review

Cosimo Durante, MD, PhD; Giorgio Grani, MD; Livia Lamartina, MD; Sebastiano Filetti, MD;
Susan J. Mandel, MD, MPH; David S. Cooper, MD

Surgical Management of Thyroid Nodules

Thyroid lobectomy provides histological diagnosis and tumor removal with a lower risk of complications. The risks of total thyroidectomy include recurrent laryngeal nerve injury (2.5% of the procedures, rarely bilateral), hypocalcemia (8.1%), and hemorrhage.[72]

Endocrine
https://doi.org/10.1007/s12020-019-02087-5

ORIGINAL ARTICLE

Check for updates

Should total thyroidectomies be performed by high-volume endocrine surgeons? A cost-effectiveness analysis

Panagiotis Anagnostis[1] · Ioannis Pliakos[2] · Stavros Panidis[2,3] · Angeliki Chorti[2] · Veronika Stelmach[2] · Antonios Michalopoulos[2] · Theodosios S. Papavramidis[2,3]

Received: 9 August 2019 / Accepted: 7 September 2019
© Springer Science+Business Media, LLC, part of Springer Nature 2019

Abstract

Purpose The increased experience of a thyroid surgeon reduces the risk of postoperative complications. However, whether it is also cost-effective is currently unknown. The aim of the present study was to compare cost-effectiveness of high-volume (HVS) with low-volume surgeons (LVS) when performing a total thyroidectomy.

Methods This was a retrospective study, comparing the mean cost of a total thyroidectomy per patient, between HVS and LVS. This included the cost of surgical procedure and pre- and post-operative inpatient hospitalization. A threshold of 25 thyroidectomies/year was used to discriminate between HVS and LVS.

Results Four-hundred and forty-one patients were classified into HVS and 342 into the LVS group. With regard to surgical complications, higher rates of temporary hypoparathyroidism and endangered airway were observed in the LVS than in the HVS group. The estimated total cost per patient was higher in the LVS compared with the HVS group [€1721 ± 396 ($1910 ± 439) versus €979 ± 68 ($1086 ± 487); $p < 0.0001$]. This cost remained higher when sub-analysis was performed for each surgical stage, involving either surgical procedure or pre- and post-operative inpatient hospitalization. Differences between LVS and HVS mainly involved the cost in surgical procedure (23% attributed to occupation of the operating room) and postoperative inpatient hospitalization (45% of the total thyroidectomy cost).

Conclusion Total thyroidectomy performed by a HVS seems to be cost-effective compared with the one conducted by LVS.

Annals of Internal Medicine

ORIGINAL RESEARCH

Thyroidectomy Versus Medical Management for Euthyroid Patients With Hashimoto Disease and Persisting Symptoms

A Randomized Trial

Ivar Guldvog, MD, PhD; Laurens Cornelus Reitsma, MD*; Lene Johnsen, MD*; Andromeda Lauzike, MD; Charlotte Gibbs, MD; Eivind Carlsen, MD; Tone Hoel Lende, MD; Jon Kristian Narvestad, MD; Roald Omdal, MD, PhD; Jan Terje Kvaløy, PhD; Geir Hoff, MD, PhD; Tomm Bernklev, PhD†; and Håvard Søiland, MD, PhD†

Table 2. Estimated Health-Related Quality-of-Life Scores in Each Group Over Time

Time	Surgery*	Control*	Difference*	*P* Value	n_{surg}, n_{cont}
SF-36 general health score†					
Baseline	38 (34-41)		–	–	72, 74
6 mo	57 (53-61)	37 (32-41)	20 (15-26)	<0.001	71, 72
12 mo	64 (59-68)	37 (32-42)	27 (20-33)	<0.001	72, 70
18 mo	64 (59-68)	35 (30-39)	29 (22-35)	<0.001	73, 70
Total fatigue score†					
Baseline	23 (22-24)		–	–	73, 74
6 mo	16 (14-17)	23 (22-24)	7.2 (5.6-8.8)	<0.001	73, 72
12 mo	15 (14-17)	23 (21-24)	7.5 (5.6-9.3)	<0.001	72, 70
18 mo	14 (13-16)	24 (22-25)	9.3 (7.4-11.2)	<0.001	73, 70
Frequency of chronic fatigue‡					
Baseline	83 (76-88)		–	–	73, 74
6 mo	36 (26-48)	77 (66-86)	41 (26-55)	<0.001	72, 71
12 mo	33 (23-46)	73 (61-82)	40 (24-54)	<0.001	70, 70
18 mo	35 (25-46)	74 (62-83)	39 (23-53)	<0.001	72, 70

Guldvog I AIM 2019

Annals of Internal Medicine®

Article Metrics

? What is this page? | Embed badge | Share

Thyroidectomy Versus Medical Management for Euthyroid Patients With Hashimoto Disease and Persisting Symptoms

Overview of attention for article published in Annals of Internal Medicine, March 2019

About this Attention Score

In the top 5% of all research outputs scored by Altmetric

MORE...

Mentioned by

11 news outlets
2 blogs
94 tweeters

SUMMARY | News | Blogs | Twitter | Facebook | Dimensions citations

Title	Thyroidectomy Versus Medical Management for Euthyroid Patients With Hashimoto Disease and Persisting Symptoms
Published in	Annals of Internal Medicine, March 2019
DOI	10.7326/m18-0284
Pubmed ID	30856652
Authors	Ivar Guldvog, Laurens Cornelus Reitsma, Lene Johnsen, Andromeda Lauzike, Charlotte Gibbs, Eivind... [show]

View on publisher site

Alert me about new mentions

TWITTER DEMOGRAPHICS | MENDELEY READERS | ATTENTION SCORE IN CONTEXT

The data shown below were collected from the profiles of **94** tweeters who shared this research output. Click here to find out more about how the information was compiled.

Annals of Internal Medicine

ORIGINAL RESEARCH

Thyroidectomy Versus Medical Management for Euthyroid Patients With Hashimoto Disease and Persisting Symptoms

A Randomized Trial

Ivar Guldvog, MD, PhD; Laurens Cornelus Reitsma, M
Eivind Carlsen, MD; Tone Hoel Lende, MD; Jon Kristi
Geir Hoff, MD, PhD; Tomm Bernklev, PhD†; and Håv

Adverse events (OP n=75):

- **3 HYPOPARA (4.1%) (1 Jahr Follow Up)**
- 3 postsurgical infections (4.1%)
- 4 recurrent laryngeal nerve palsy (5.5%)

Adverse Events, Surgical Complications, and Surgical Specimens

In the control group, 1 patient had a stroke and 1 patient died in a car accident (Figure 1). In the surgery group, 3 patients had postsurgical infections (4.1%), 1 of which was initiated by a 4-mm injury to the trachea and subcutaneous emphysema; the other 2 were wound infections. Three patients (4.1%) had long-standing hypocalcemia. No clinically relevant bleeding was observed. Four patients (5.5%) had unilateral recurrent laryngeal nerve palsy at examination 4 and 12 months after surgery. All 4 were followed by an ear, nose, and throat specialist for 12 months, and their voice quality improved either spontaneously or after training with a speech therapist.

An experienced pathologist examined all surgical specimens; histologically, they showed characteristic Hashimoto changes. Papillary cancer was diagnosed in 2 patients, 1 with an 8-mm lesion and 1 with several 1-mm lesions in both lobes.

Guldvog I AIM 2019

.. a complication rate of 5.5% for recurrent laryngeal nerve injuries (2.7% of the nerves at risk) and **4.1% for permanent hypocalcemia may be considered a reasonable tradeoff between risk and benefit**.

Thus, total thyroidectomy **seems to be a safe and effective treatment option for patients** who have Hashimoto disease with severe Hashimoto-related symptoms.

Guldvog I AIM 2019

PTH - WIRKUNG

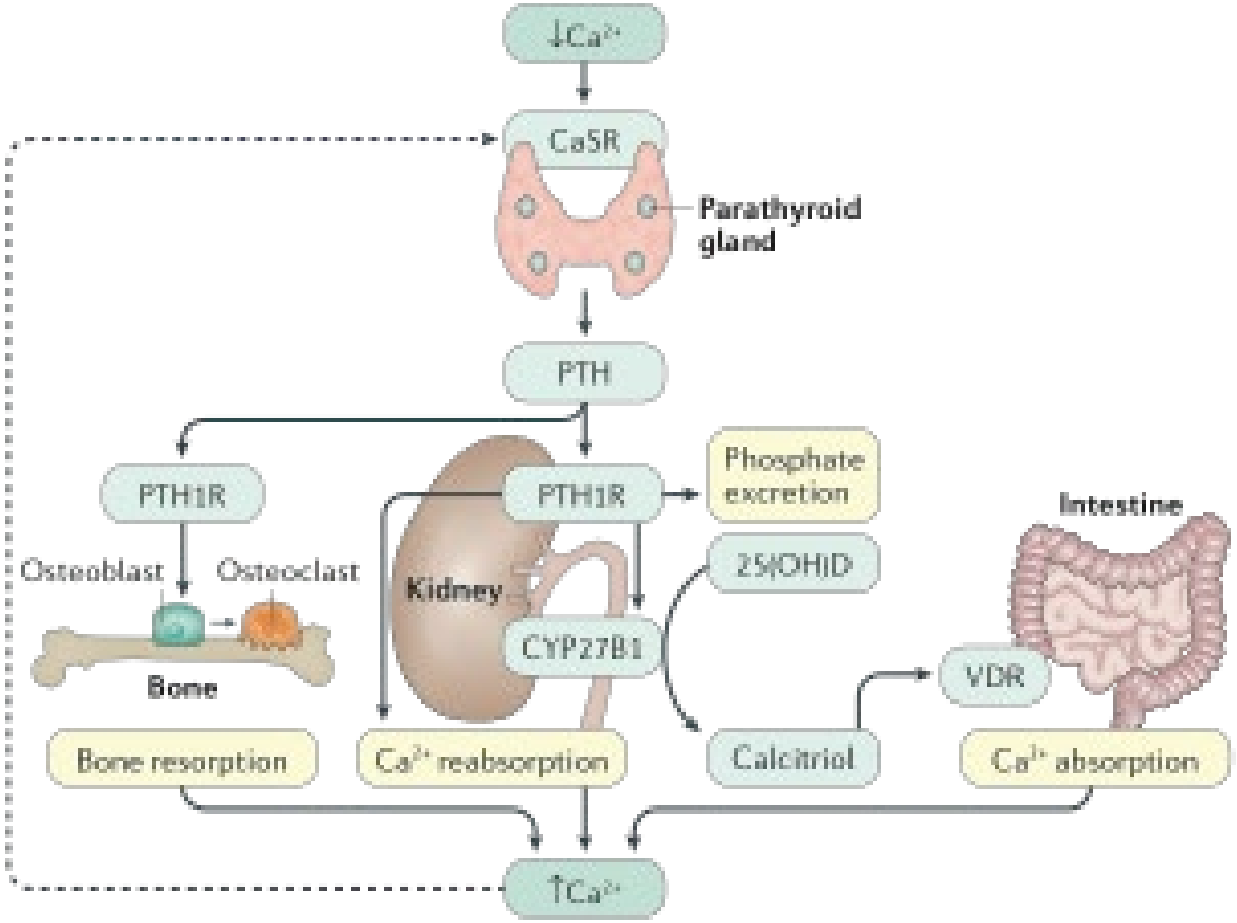


Figure 1 | **Regulation of extracellular calcium homeostasis.** Reduced activation of the extracellular calcium-sensing receptor (Ca5R) owing to a reduction in extracellular calcium levels results in a rapid increase in parathyroid hormone (PTH) secretion. PTH acts on the PTH1 receptor (PTH1R) in the kidneys and bone. In bone, PTH1R

Mannstadt M Nature Rev 2018

KOMPLIKATIONEN

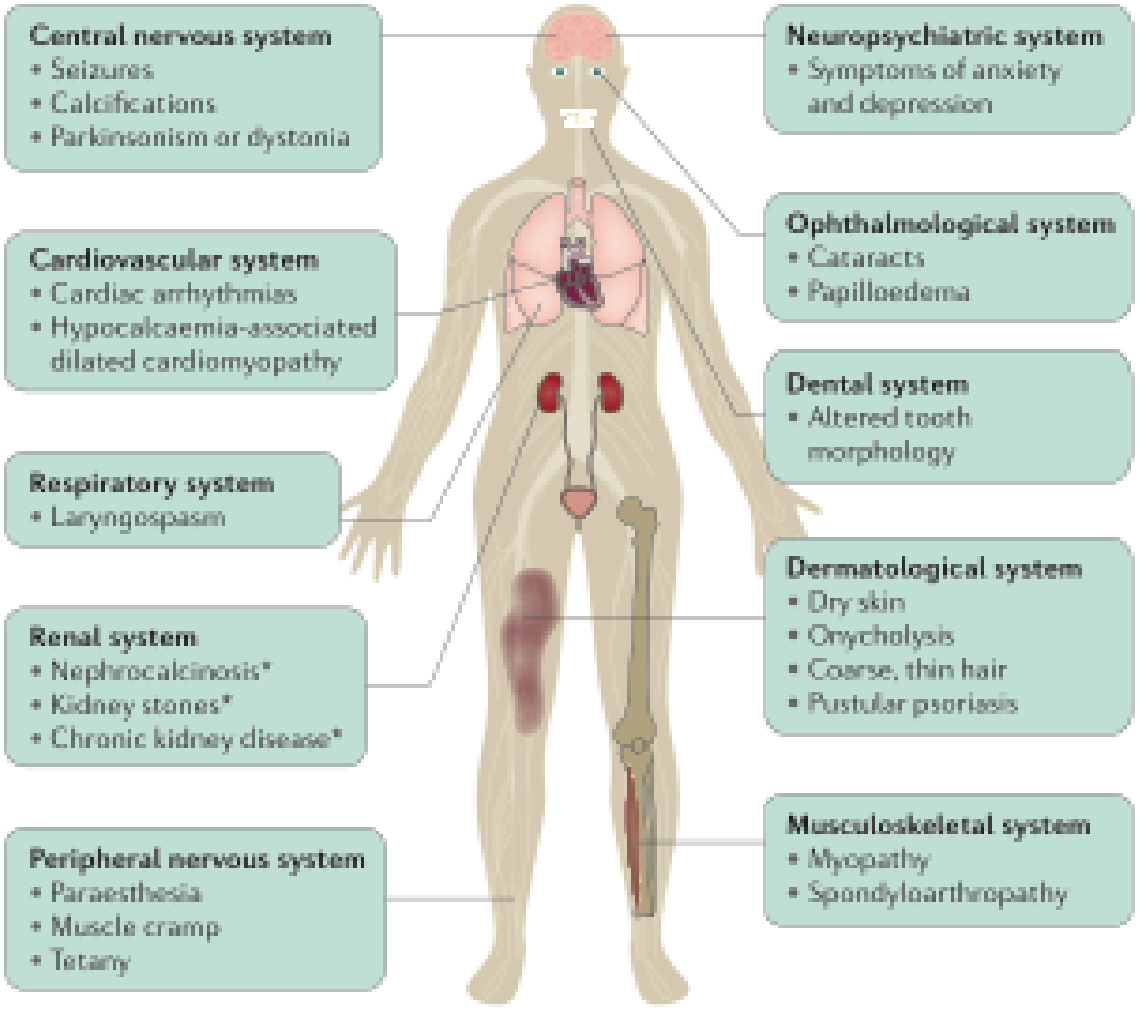


Figure 4 | **Clinical manifestations of hypoparathyroidism.** Common and rare manifestations are shown. *These manifestations are mostly the result of treatment with calcium and activated vitamin D rather than of the disorder itself.

Mannstadt M Nature Rev 2018

ORPHAN DISEASE

- Prävalenz:
  - 10/100,000 (Astor, Norwegen)
  - 22/100,000 (Underbjerg, Dänemark)
  - 37/100,000 (Clarke, USA)
  - 40/100,000 (Vadiveloo, UK)

➢ 80% Frauen

➢ Ö: ca. 2500 Pat.

➢ China: > 300,000 Pat!

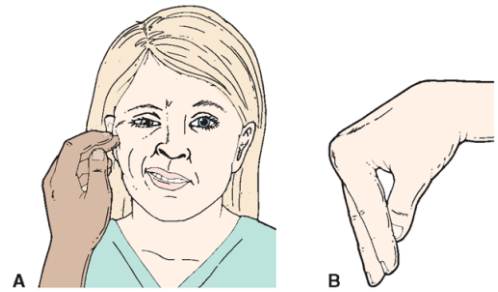


Abbildung 3: Chvostek- und –Trousseau-Zeichen

DIAGNOSE EJE GUIDELINE 2015

Clinical Practice Guideline	J Bollerslev, L Rejnmark and others

1.1. Diagnosis

R.1.1 We recommend considering a diagnosis of chronic hypoparathyroidism (HypoPT) in a patient with hypocalcaemia and inappropriately low parathyroid hormone (PTH) levels.

R.1.2 We suggest considering genetic testing and/or family screening in a patient with HypoPT of unknown aetiology.

Bollerslev J EJE 2015

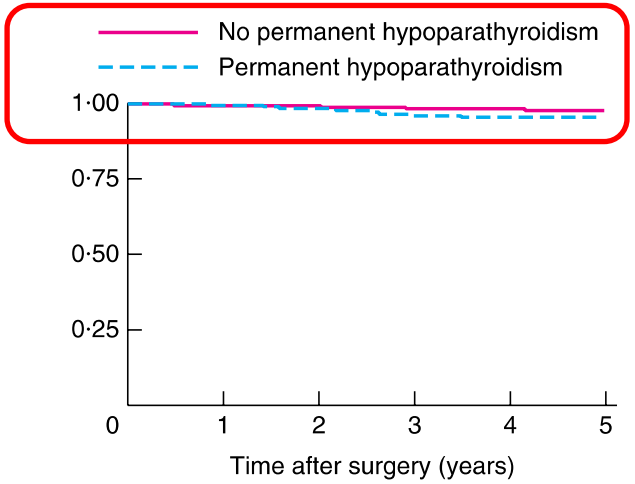
DIAGNOSE EJE GUIDELINE 2015

CA ⬇

PTH **„INADEQUATELY“ LOW**

Bollerslev J EJE 2015

HYPOPARA:
ERHÖHTE STERBLICHKEIT!



No. at risk						
No permanent hypoparathyroidism	4653	4295	3653	3056	2472	1915
Permanent hypoparathyroidism	246	233	192	153	114	88

Almquist M BJS 2018

Long-Term Complications in Patients With Hypoparathyroidism Evaluated by Biochemical Findings: A Case-Control Study

Line Underbjerg, Tanja Sikjaer, and Lars Rejnmark

Department of Endocrinology and Internal Medicine, Aarhus University Hospital, Aarhus, Denmark

ABSTRACT

Hypoparathyroidism (HypoPT) is associated with an increased risk of various complications, but only few data are available on risk factors. Using a case-control design, we assessed associations between biochemical findings and risk of different complications within a subpopulation of our previously identified Danish patients. We retrieved all biochemical data available on 431 (81% women) patients from the Central Region of Denmark, covering approximately 20% of the Danish population. Average age of patients was 41 years at time of diagnosis. Most patients (88%) had HypoPT due to surgery, mainly due to atoxic goiter and more than 95% were on treatment with calcium supplements and activated vitamin D. On average, time-weighted (tw) plasma levels of ionized calcium (Ca^{2+}_{tw}) was 1.17 mmol/L (interquartile range [IQR], 1.14 to 1.21 mmol/L) and the calcium-phosphate ($CaxP_{tw}$) product was 2.80 $mmol^2/L^2$ (IQR, 2.51 to 3.03 $mmol^2/L^2$). High $phosphate_{tw}$ levels were associated with increased mortality and risk of any infections, including infections in the upper airways. A high $CaxP_{tw}$ product was associated with an increased mortality and risk of renal disease. Compared to levels around the lower part of the reference interval, lower Ca^{2+}_{tw} levels were associated with an increased risk of cardiovascular diseases. Mortality and risk of infections, cardiovascular diseases, and renal diseases increased with number of episodes of hypercalcemia and with increased disease duration. Treatment with a relatively high dose of active vitamin D was

n= 431

Underbjerg L JBMR 2019

Table 3. Risk of Studied Complications According to Tertiles of Time-Weighted Averages of Plasma Concentrations of Ionized Calcium, Phosphate, and the Calcium-Phosphate Product, and the Number of Episodes of Hypercalcemia

	Mortality	Any cardiovascular disease	Any renal disease	Any infection
Ionized calcium$_{tw}$ (mmol/L)[a]				
≤1.15	0.70 (0.22–2.28)	**3.01 (1.03–8.82)**	0.98 (0.51–1.90)	0.71 (0.37–1.36)
1.16–1.19	*Reference*	*Reference*	*Reference*	*Reference*
≥1.20	0.99 (0.29–3.41)	3.01 (0.96–9.48)	1.32 (0.70–2.48)	0.95 (0.50–1.79)
Phosphate$_{tw}$ (mmol/L)[b]				
Hypercalcemic episodes[d]				
0	*Reference*	*Reference*	*Reference*	*Reference*
1 to 3	**3.39 (1.05–10.91)**	1.19 (0.47–3.06)	**3.05 (1.56–5.97)**	1.65 (0.85–3.18)
≥4	2.09 (0.48–9.11)	**9.69 (2.63–35.79)**	**3.31 (1.55–7.08)**	**2.74 (1.19–5.14**

Underbjerg L JBMR 2017

STANDARDBEHANDLUNG

- CALCIUM (IV)
- **CALCIUM PO**
- **AKTIVES VITAMIN D (Calcitriol…)**
- **NATIVES VITAMIN D (D3, Cholecalciferol)**
- MAGNESIUM
- HYDROCHLOROTHIAZID
- …

KRITERIEN FÜR EINE SUBSTITUTIONSTHERAPIE MIT rhPTH (1-84)

Chronischer Hypoparathyreoidismus:
Hinweise auf die Indikation einer rhPTH (1-84) Therapie[2]

- Orales Calcium/Vitamin-D zur Kontrolle von Serum Calcium oder Symptomen liegt > 2,5 g Calcium oder > 1,5 µg von aktivem Vit.-D3 oder > 3 µg 1-alpha-Hydroxycholecalciferol
- Hyperkalziurie, Nephrolithiasis (aktuell, anamnestisch oder Risiko)
- Eingeschränkte Nierenfunktion, GFR < 60 ml/Min.
- Hyperphosphatämie und/oder ein Ca/P-Produkt > 55 mg^2dL^2 (4.4 $mmol^2L^2$)
- Klinisch manifeste Malabsorption zB. Bariatr. Pat., manche APS1
- Reduzierte Lebensqualität

C-ANPROM/AT//0184

Referenzen

1 Bollerslev J, Rejnmark L, Marcocci C, et al. European Society of Endocrinology Clinical Guideline: Treatment of chronic hypoparathyroidism in adults. Eur J Endocrinol. 2015;173(2):G1-20.

2 Brandi et al.: Management of Hypoparathyroidism: Summary Statement and Guidelines, JCEM, doi: 10.1210/jc.2015-3907

Takeda

KRITERIEN FÜR
UNZUREICHEND EINGESTELLTE PATIENTINNEN

Unzureichende Standardtherapie[1]

- Tägliche orale Kalzium / Vitamin D Supplementierung von

  ≥ 2.5 g Kalzium

  ≥ 1.5 µg aktives Vitamin D

Laborwerte außerhalb Normbereich[1–4]

- **Serumkalzium-Spiegel <2.0 mmol/L (Albumin-korrigiert)**
- **Reduziertes 25-OH-Vitamin D**
- **Hypomagnesiämie**
- **Hyperkalziurie (>4 mg/kg / 24 h)** oder verringerte Kreatinin-Clearance

Parathormon-Mangel (< 16-20 pg/ml)

Hyperphosphatämie (>1.4 mmol/L) oder **erhöhtes Ca-PO4-Produkt** (> 4.4 $mmol^2L^2$)

Schwer ausgeprägte Symptomatik[3]

Hypokalzämie

- **Muskelkrämpfe**
- **Parästhesien**
- Tetanische Anfälle

Eingeschränkte Lebensqualität[5,6]

- Depression und Angstzustände
- Reduzierte körperliche Verfassung
- Einschränkungen bei sozialer Interaktion

Begeleiterkrankungen[3]

- Nephrokalzinose und Niereninsuffizienz
- Ektope Kalzifizierungen (Gefäße, Katarakt)
- Notfälle aufgrund von Hypo- / Hyperkalzämien

1. Brandi ML, et al. *J Clin Endocrinol Metab.* 2016;101(6):2273–83; 2. Clarke BL, et al. *Endocrine* 2017;55:273–82; 3. Bollerslev J, et al. *Eur J Endocrinol.* 2015;173(2):G1–20; 4. Wiffen P, Mitchell M, Snelling M, Stoner N. Oxford Handbook of Clinical Pharmacy. Second ed: Oxford University Press; 2012;
5. Vokes TJ, et al. *J Clin Endocrinol Metab* 2018;103:722–31; 6. Underbjerg L, et al. *Clin Endocrinol (Oxf)*. 2018 [Epub ahead of print]

Klinische Leitlinie der Europäischen Gesellschaft für Endokrinologie:

Ziele der Behandlung von chronischem Hypoparathyreoidismus bei Erwachsenen[1]

Parameter	Behandlungsziele
Serum-Calcium-Konzentration (Albumin-korrigiertes Gesamt-Calcium)	Patienten, die frei von den Symptomen/Anzeichen einer Hypokalzämie sind, im unteren Teil oder leicht unter dem Referenzbereich halten **Zielwerte: 2,1 – 2,3 mmol/l**
24-Stunden-Urin-Calcium-Ausscheidung	Innerhalb des Referenzbereichs halten: ♂ **< 7,5 mmol/24 Stunden (300 mg/24h)** ♀ **< 6,25 mmol/24 Stunden (250 mg/24h)** } **0,1 mmol/kg/24h (4 mg/kg/24h)**
Serum-Phosphat-Konzentration	Innerhalb des Referenzbereichs halten
Serum-Calcium-Phosphat-Produkt	Halten: **< 4,4 mmol²/l² (< 55 mg²/dl²)**
Serum-Magnesium-Konzentration	Innerhalb des Referenzbereichs halten
Vitamin D	Ausreichende Versorgung gewährleisten

Routinemäßige Kontrolle

Alle 3 – 6 Monate

- Biochemische Parameter: Serum-Calcium, Phosphat, Magnesium und Kreatinin, eGFR (estimated glomerular filtration rate)*
- Symptome der Hypo- und Hyperkalzämie

Jährlich

- Calciumausscheidung im 24-Stunden-Sammelurin
- Anzeichen oder Symptome von Begleiterkrankungen

* Wöchentliche oder zweiwöchentliche Überwachung nach Änderung der Therapie empfohlen.

Die Definition der Referenzbereiche kann laborspezifische Unterschiede aufweisen.

1 Bollerslev J, Rejnmark L, Marcocci C, et al. European Society of Endocrinology Clinical Guideline: Treatment of chronic hypoparathyroidism in adults. Eur J Endocrinol. 2015;173(2):G1-20.

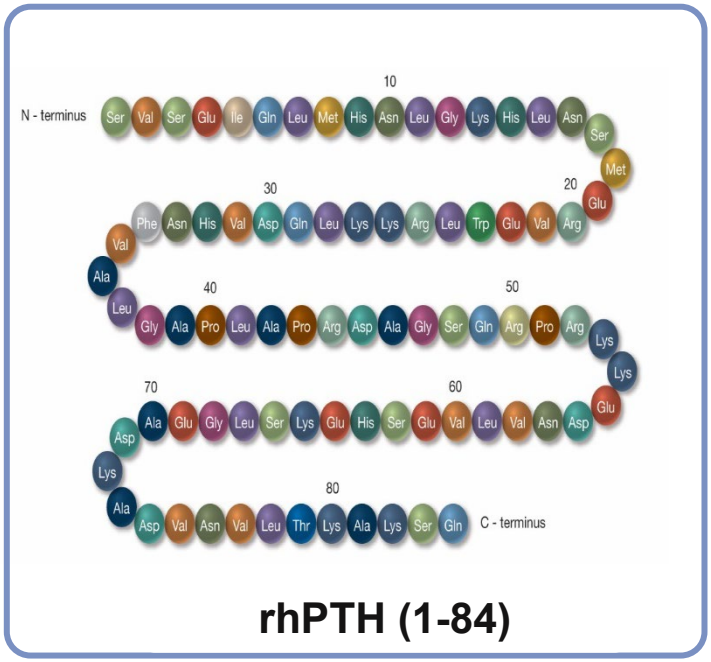
rhPTH (1-84), Natpar

- ZUGELASSEN USA 2015
- ZUGELASSEN EU 2017
- 1x TÄGLICH 25,50,75,100 ug
- in Ö 27 PAT, 1 Kind (Stand NOV 2019)

Natpar®: Rekombinantes humanes Parathormon

rhPTH(1-84)

- Vollständiges humanes Parathormon mit 84 Aminosäuren
- Identisch mit endogenem Parathormon
- Bindet an Rezeptoren in Knochen, Nervenzellen, Nieren und Darm
- *In-vivo* Halbwertszeit ca. 5 Minuten (Natpar®: 3h)



rhPTH (1-84)

Reguliert Serumkalzium- und Serum-Phosphat in den physiologischen Normbereich

1. Gardella J, et al. *J Biol Chem*. 1990;265:15854-15859.

REPLACE - Zulassungsstudie

Studiendesign

Ziel:

- **Wirksamkeit und Verträglichkeit von einmal täglicher, flexibler von rhPTH(1-84)-Dosierung (50 µg, 75 µg, oder 100 µg)** bei Erwachsenen mit Hypoparathyreoidismus

Studiendesign:

- Doppel-blinde, placebo-kontrollierte, randomisierte Phase 3-Studie
- 134 Patienten (≥18 J) mit Hypoparathyreoidismus (≥ 18 Monate)
  - **Calcitriol ≥0,25 µg/d** oder Alfacalcidol ≥0,50 µg/Tag
  - **Orales Calcium ≥1 g/d**
- Initiale Optimierung von oralem Calcium und Vitamin D (Zielserum-Spiegel 2,0 – 2,25 mmol/l)
- **Startdosis 50 µg/d** rhPTH(1-84), im Anschluss Titration möglich

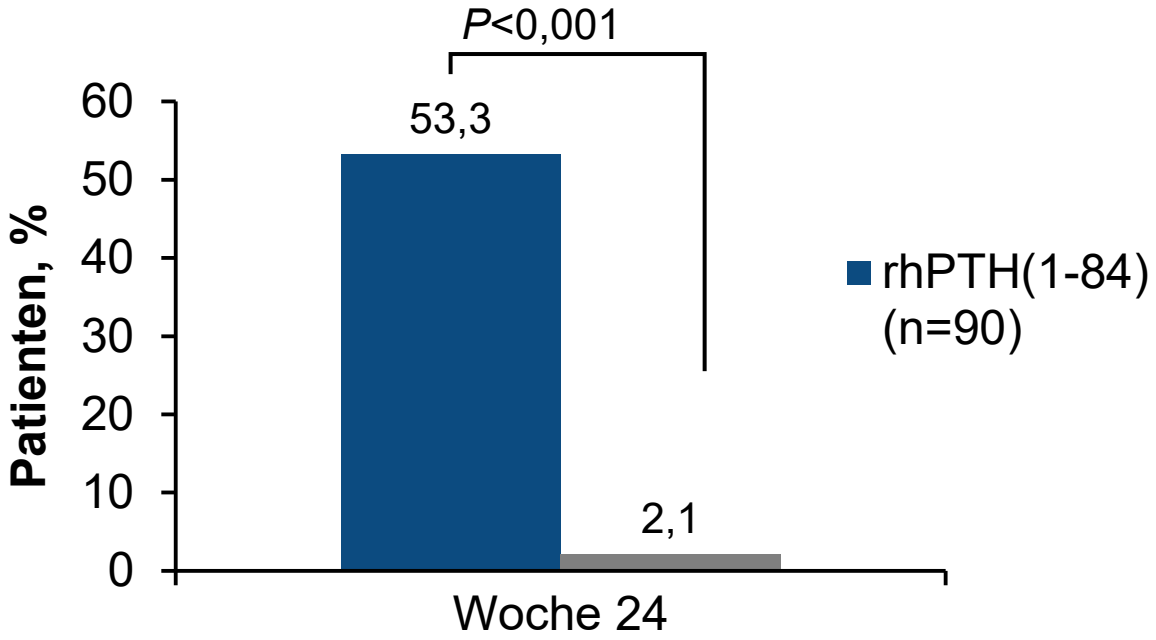
Mannstadt M, et al. *Lancet Diab Endocrinol*. 2013;1:275-283.

Takeda

REPLACE

Ergebnisse – Primärer Endpunkt

Responder Woche 24 = **≥50% Reduktion von Baseline oralem Calcium** + **≥50% Reduktion von Baseline aktivem Vitamin D** + **Serumcalcium ≥ Baseline und ≤ Ober-grenze des Normbereichs**



rhPTH(1–84)-Gruppe mit signifikant höherem Patienten-Anteil versus Plazebo (Erreichen des zusammengesetzten primären Endpunkts)

1. Mannstadt M, et al. *Lancet Diab Endocrinol.* 2013;1:275-283.

REPLACE

Ergebnisse – Sekundärer Endpunkt

REPLACE – Absetzen der Begleitmedikation

rhPTH (1-84) - Gruppe	%
Kein Bedarf mehr an oralem Calcium **und** aktivem Vitamin D	20%
≤ 500 mg orales Calcium **und** kein Bedarf mehr an aktivem Vitamin D	42%
Kein Bedarf mehr an aktivem Vitamin D	62%

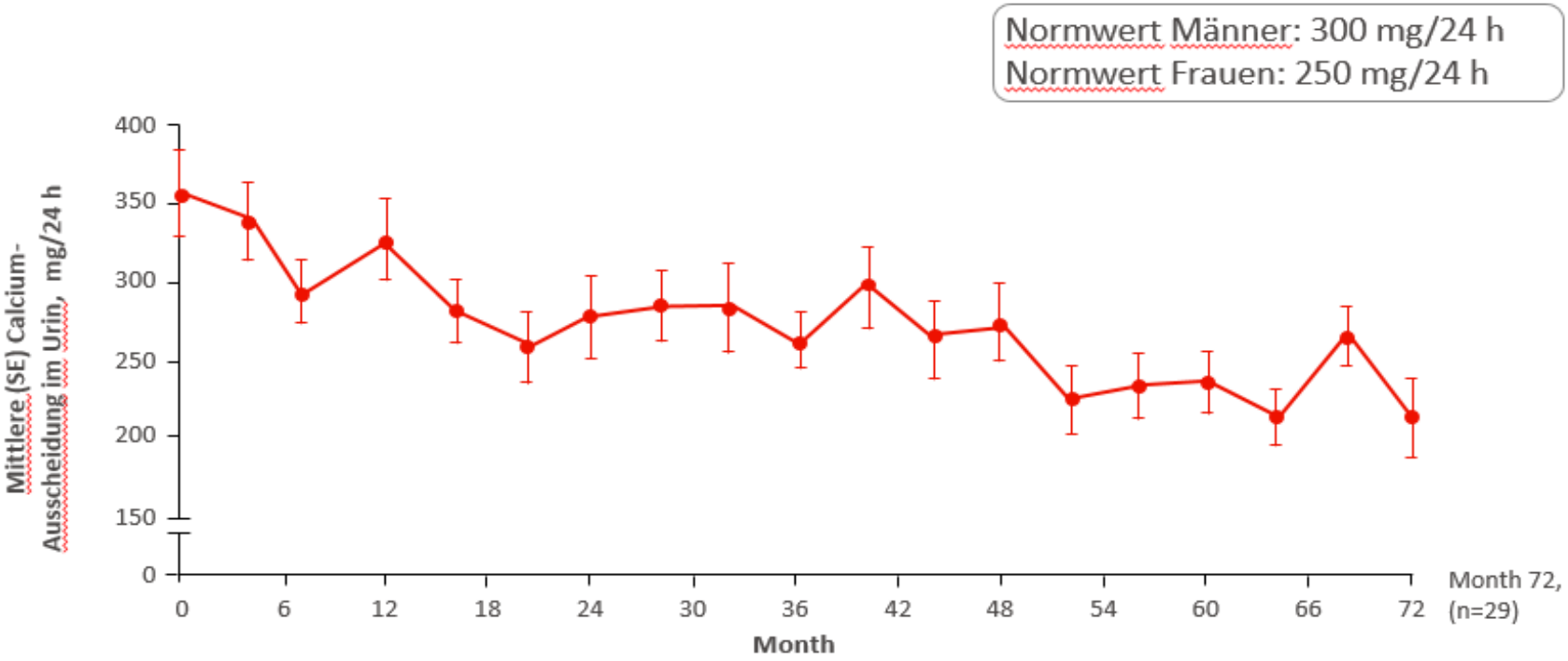
*P<0,001

ITT=intent-to-treat

1. Mannstadt M, et al. *Lancet Diab Endocrinol.* 2013;1:275-283.

Takeda

RACE-Studie:
Kalzium- und Vitamin D-Supplementierung, Kalziumausscheidung im Urin über 72 Monate (Mittelwerte)



Normalisierung der mittleren Kalzium-Ausscheidung im Urin[1]

Mittlere eGFR von 75 – 82 ml/min über 72 Monate[1]

SE, standard error

1. Bilezikian JP, et al. Annual Meeting of the Endocrine Society, 2019 [Poster GP15]

NATPAR®: INDIKATION

4.1 Anwendungsgebiete

Natpar® ist als Zusatztherapie bei erwachsenen Patienten mit chronischem Hypoparathyreoidismus angezeigt, deren Erkrankung sich durch die Standardtherapie allein nicht hinreichend kontrollieren lässt

Natpar® 25, 50, 75 oder 100 Mikrogramm/Dosis Pulver und Lösungsmittel

- **Startdosis 50 µg/d** rhPTH(1-84), im Anschluss Titration alle 2-4 Wochen möglich
- Initiale Optimierung von oralem Calcium und Vitamin D vor Therapiebeginn

Einstellung des Kalzium-Serumspiegels in den unteren Normbereich:

≤ 2,25 mmol/l

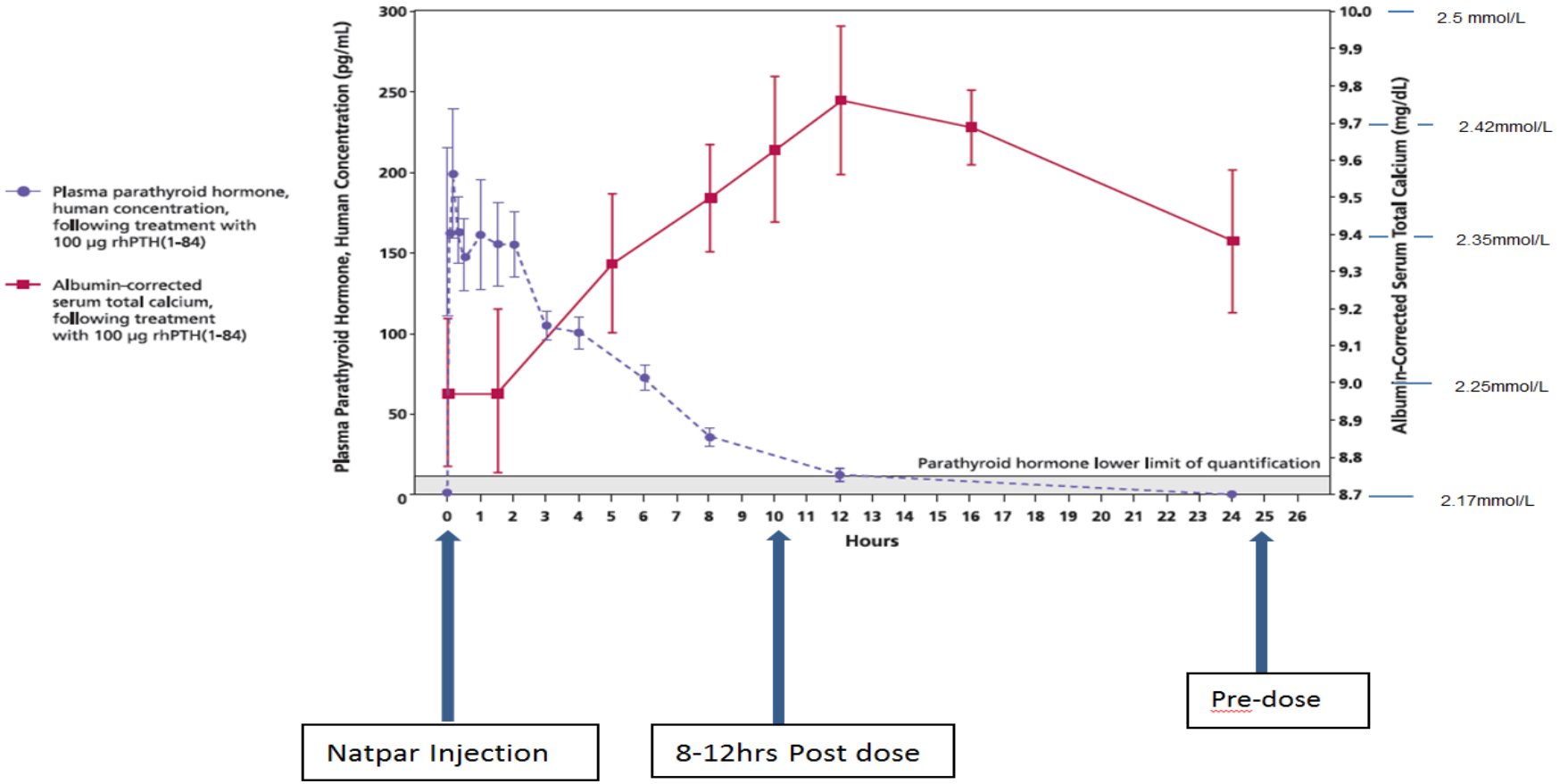
Anleitung der Patienten für den Gebrauch des Pens und Betreuung während der Therapie durch examiniertes Pflegepersonal

Natpar® Fachinformation: Stand Januar 2019

.

Takeda

RATIONALE FÜR MESSUNG DER KALZIUMSPIEGEL VOR- / NACH APPLIKATION



Natpar® US Prescribing Information 2015

PATIENT NR. 1 in Ö

50J. Mann

- 8 jährige schwere Mumpsinfektion mit Meningoencephalitis, Hypopara ED während Spitalaufenthalt
- Arbeitet Vollzeit als Landwirt, Sport: Radfahren, <u>keine typischen Symptome</u>

PATIENT NR. 1

- Labor
  - PTH 1.5 pg/mL
  - **Calcium 1.85 mmol/L**
- Behandlung
  - Calcitriol 1.25 µg/Tag
  - Calcium carbonate 1–4 g/Tag

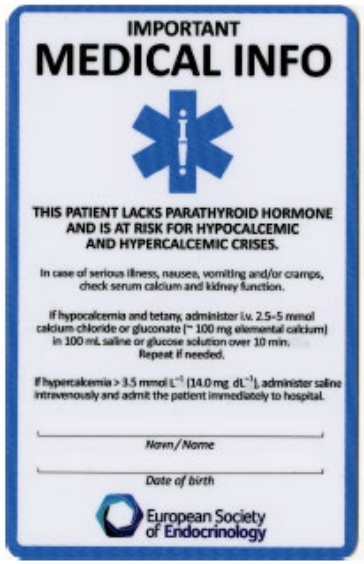
PATIENT NR. 1 - VERLAUF

	Zweieinhalb Jahre vor Therapiebeginn	Therapiebeginn mit Natpar®	Zwei Monate nach Therapiebeginn	Ein Jahr nach Therapiebeginn
LABOR				
Kalzium, mmol/l	2,06	1,83	2,24	2,5
Phosphat, mg/dl	4,41	4,93	2,40	3,86
Kreatinin, mg/dl	1,43	1,43	1,37	1,28
GFR, ml/min	58	58	59	64
PTH, pg/ml	0,4	1,5		141 (nach Natpar®)
25-Hydroxyvitamin- D3, ng/ml		33	32	
Osteocalcin, ng/ml		11,0	71,3	
THERAPIE				
Calcitriol, microg	0,5 2x; 0,25 1x	0,5 2x; 0,25 1x	0,25 0–1x	0,25 1x
Kalzium	500 mg nach Bedarf	1.000 mg bei Bedarf, deutlich häufiger	500 mg bei Bedarf, nur bei besonderer Belastung	500 mg bei Bedarf, nur bei besonderer Belastung
HCT	50 mg/Tag	50 mg/Tag	25 mg/Tag	0
Aluminiumhydroxid-Pulver	2x 2 Dosierlöffel	2x 2 Dosierlöffel	0	0
rhPTH (1-84)		START 75 µg/Tag	75 µg/Tag	75 µg/Tag

Abkürzungen: GFR = glomeruläre Filtrationsrate; HCT = Hydrochlorothiazid; PTH = Parathormon; rhPTH = rekombinantes humanes PTH

WICHTIGE DETAILS

- INDIVIDUELLE BEHANDLUNG
- ERNÄHRUNG
- SPORT, STRESS, ...
- TIMING LABOR
- HYPERKALZÄMIE
- RISIKOGRUPPEN
  - ie BARIATRISCHE PAT



SCHWANGERSCHAFT

- KAUM DATEN
- HOCHRISIKO!
- KEIN NATPAR
- INTERDISZIPLINÄRE BETREUUNG

中华医学杂志

点赞 0 分享 0 收藏 0 纠错 登录 注册

• 临床研究 •

甲状旁腺功能减退症伴肌酶改变41例临床分析

吴文迅 任晓燕 翟晨光

中华医学杂志, 2013,93(02) : 135-137. DOI: 10.3760/cma.j.issn.0376-2491.2013.02.014

摘要

目的 探讨甲状旁腺功能减退症（HP）伴肌酶改变的临床资料及与年龄、性别、病程、血清总钙、总磷、甲状旁腺激素（PTH）的关系。

方法 对2005年1月至2011年10月郑州大学第一附属医院内分泌科收治的HP患者41例病历资料进行回顾性分析。

结果 41例HP中16例伴肌酶增高，25例肌酶正常。16例肌酶增高患者中特发性HP（IHP）11例，假性HP（PHP）5例；血钙（1.53±0.25）mmol/L，血磷（2.1±0.6）mmol/L，血清肌酸激酶（CK）、乳酸脱氢酶（LDH）、天冬氨酸转氨酶（AST）分别为309（126～10 046）U/L、279（131～741）U/L、27（17～467）U/L。25例肌酶正常患者中IHP 20例，PHP 5例；血钙（1.64±0.29）mmol/L，血磷（2.2±0.6）mmol/L；CK（124±45）U/L，LDH（189±22）U/L，AST（25.6±7.3）U/L。16例HP肌酶增高患者治疗前后肌酶进行比较，肌酶水平均随血钙浓度的升高明显降低。HP患者的CK（$r=-0.82$）、LDH（$r=-0.55$）、AST（$r=-0.56$）的增高与血钙浓度呈负相关（均$P<0.05$）；与年龄、性别、病程、血清磷、PTH均无相关性（$P>0.05$）。

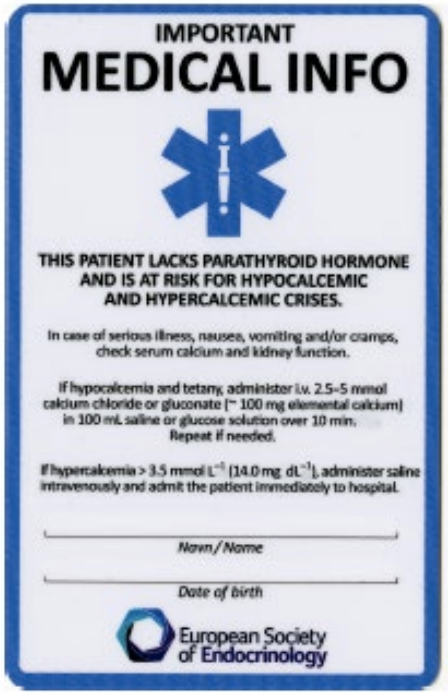
结论 HP患者的肌酶增高与血清钙呈负相关，与年龄、性别、病程、血清磷、PTH均无相关性；且各种酶学的变化随着血钙水平的正常而逐渐恢复。

引用本文: 吴文迅, 任晓燕, 翟晨光. 甲状旁腺功能减退症伴肌酶改变41例临床分析 [J] . 中华医学杂志,2013,93(02): 135-137.
DOI: 10.3760/cma.j.issn.0376-2491.2013.02.014

扫描看全文

CONCLUSION

- INDIVIDELLE BEHANDLUNG
- ERNÄHRUNG, SPORT, STRESS, ...
- PHYSIOLOGISCHERE BEHANDLUNG IN ZUKUNFT


IMPORTANT
MEDICAL INFO

THIS PATIENT LACKS PARATHYROID HORMONE AND IS AT RISK FOR HYPOCALCEMIC AND HYPERCALCEMIC CRISES.

In case of serious illness, nauses, vomiting and/or cramps, check serum calcium and kidney function.

If hypocalcemia and tetany, administer i.v. 2.5–5 mmol calcium chloride or gluconate (~ 100 mg elemental calcium) in 100 mL saline or glucose solution over 10 min. Repeat if needed.

If hypercalcemia > 3.5 mmol L^{-1} (14.0 mg dL^{-1}), administer saline intravenously and admit the patient immediately to hospital.

Navn / Name

Date of birth

European Society of Endocrinology

DANKE
KARIN.AMREIN@MEDUNIGRAZ.AT