

# 7 $\alpha$ -hydroxy-4-cholesten-3-one for Diagnosis and Management of Bile Acid Malabsorption: first year clinical experience.

## Authors:

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## Introduction

7 $\alpha$ -hydroxy-4-cholesten-3-one (7HCO) is a reliable method to diagnose bile acid malabsorption (BAM). Since 7HCO is an intermediate metabolite in the bile acid synthesis, increased levels reflect bile acid production, which is the case in BAM.

## Aims & Methods

We evaluate retrospectively, prospectively collected clinical data during the first year after implementation of a new test using ultra-high performance liquid chromatography coupled to mass spectrometry to measure 7HCO. In adult patients with clinical suspicion of BAM, unexplained diarrhea and a subgroup with obesity 7HCO was measured. Levels < 30 ng/ml are considered as normal values. The decision to treat with cholestyramine was at the discretion of the treating physicians.

## Results

We performed 126 7HCO analysis in 112 patients (62% female, mean age 51 $\pm$ 16 years) with a mean level of 84 $\pm$ 91ng/ml. Cholestyramin treatment was more likely initiated in patients with Crohn's disease (RR 1.8; 95%CI 0.9-3.7) or after ileocecal resection (RR 3.1; 95%CI 1.7-5.7). Diarrhea improved in 60% of patients with a 7HCO level above 40 ng/ml. Thresholds of 60 or 100 ng/ml do not improve prediction of response to cholestyramin treatment

Table: 7HCO measurement in subgroups

Subgroups	Number	Mean [ng/ml]	SD	Range <sup>#</sup>
Diarrhea	79	94 <sup>*</sup>	96	<5 - >300
No diarrhea	33	59 <sup>*</sup>	71	<5 - >300
Cholestyramin treated	27	167 <sup>§</sup>	105	11 - >300
Cholestyramin untreated	85	57 <sup>§</sup>	67	<5 - >300
Crohn's disease (CD)	18	182	105	13 - >300
Ileocecal resection (IR)	26	197	105	28 - >300
CD + IR	13	214	95	41 - >300
Obese ( $\varnothing$ BMI 39.1kg/m <sup>2</sup> )	21	62	49	6 - 244

\*p<0.05; §p<0.001; #Validation Range 5 – 300 ng/mL

## Conclusion

A 7HCO measurement above 40 ng/ml seems to be associated with a good response to cholestyramine treatment, which suggests clinical bile acid malabsorption. However, most patients have higher levels, particularly in Crohn's disease after ileocecal resection. These preliminary results warranted confirmation on a larger scale.