Pseudoexfoliation- and Pigmentary Glaucoma...
so what?

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Glaucoma is not Glaucoma
Name, grade, assess, rate and THEN treat

1) Examination and Classification
   • Full ophthalmic examination (angle) ?
   • Baseline IOP?
   • Pseudoexfoliation, Pigment dispersion ?

   \[\rightarrow\text{Classification Secondary Open Angle Glaucomas}\]

2) Grading / quantification of damage
   • OHT
   • Preperimetric glaucoma
   • Early, moderate or severe galucoma
Name, grade, assess, rate and **THEN** treat

3) Assessing
   - Risk factors for conversion / progression?
   - Baseline IOP?

4) Rating
   - Stable / slowly progressing
   - Rapid progressing

5) Treating
   - Treatment
   - Follow up
Treatment of PEX- and pigmentary Glaucoma

Treatment and follow up like POAG
The difference...

Pigmentary dispersion / pigmentary dispersion glaucoma
- Sometimes "self limiting"
- Glaucoma is the only problem
- May affect young patients
...PEX is far more dangerous

- PEX increases risk of progression (2x in the EMGT\(^1\))
- May cause ophthalmic problems other than Glaucoma
- **Prevalence and bilaterality increase with age**\(^2\)
- **Severity and course may differ between populations**\(^3\)
  - \(>49\) western Ireland 1.3\% (Coffey et al. 1993)
  - \(>49\) Iceland 10.3\% (Jonasson et al. 2003)
  - \(>70\) Finland 22.1\% (Hirvelä et al. 1995)
- No precise data regarding PEX and PEX-Glaucoma in Switzerland

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1) Leske et al, Predictors of long term progression in the EMGT. Ophthalmology 2007;114:1965-70
Demographic development in Switzerland

<table>
<thead>
<tr>
<th>Age Group</th>
<th>1960</th>
<th>2009</th>
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<tr>
<td>80y</td>
<td>15’053</td>
<td>43’815 x3</td>
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<tr>
<td>90y</td>
<td>1’492</td>
<td>12’959 x10</td>
</tr>
<tr>
<td>99+</td>
<td>56</td>
<td>4’132 x100</td>
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</table>
Demographic development in Switzerland

- People over 65 years of age
  - 2010: 1’343’318
  - 2035: 2’294’579

Source: BFS
What we know and what to expect

• Prevalence of PEX in Switzerland unknown
• Number of elderly patients is increasing
• Number of patients with PEX will increase
• Ocular hypertension in 5.3% in 5 years and 15.4% in 10 years\(^1\)
• Conversion rate to PEX-Glaucoma is 32% in 10 years\(^2\)

1) Henry JC et al. Long term follow up of PEX and the development of elevated IOP. Ophthalmology 1987;94:545-552
2) Puska P. Unilateral PEX: Conversion to bilateral PEX and to glaucoma. J Glaucoma 2002;11:517-524
And patients with PEX allone...

...are they safe?
PEX and the eye

- PEX is a risk factor for cataract formation
- Zonular weakness
- Pseudoexfoliation keratopathy
- Structural vascular changes in iris and posterior segment

1) Bialasiewisz AA et al. Cataract patients with PEX among a population with high prevalence of PEX. Ophthalmologe 2005;102:1181-1185
The most dangerous manifestation of zonular weakness is:

A  IOL-Subluxation
B  Capsular phimosis
C  Secondary angle closure
D  Acute IOP increase following pupillary dilatation
Case report

- female patient 83y
- PEX-Glaucoma, pseudophakic, AMD (geographic atrophy)
- Rapid progression despite well controlled IOP
One day...

- IOP 43 mmHg
- asymptomatic
- shallow anterior chamber
- Laser PI not effective
Secondary angle closure in pseudophakic patients with PEX

- Condition probably underdiagnosed
- Chronic and intermittent angle closure observed
- CTR as risk factor
- Typically 6-7 years after cataract surgery
- Laser PI may not be effective
- IOP exchange probably the only effective treatment


Pseudoexfoliation keratopathy

- PEX flakes and reduced endothelial cell count
- Can be differentiated from Fuchs’ endothelial dystrophy “atypical nonguttata Fuchs’ endothelial dystrophy”
- Increases the risk of endothelial corneal decompensation.

Pseudoexfoliation and vascular changes in the posterior segment

• PEX and other type of Glaucomas are associated with mainly CRVO, PEX was not identified as an independent risk factor

• Strong association between PEX and CRVO (indipendent from glaucoma) 

1) Antman G et al. The Incidence of Retinal Vein Occlusion in Patients with Pseudoexfoliation Glaucoma: A Retrospective Cohort Study. Ophthalmologica 2018;2:1-7 (e-pub)

2) Karagiannis G et al. Central retinal vein occlusion and pseudoexfoliation syndrome.. Clin Intervent Aging 2015:10:879-83
Take home message

- Pigment dispersion- and PEX may cause aggressive forms of glaucoma
- PEX and PEX-related complications will increase in the future
- PEX may causes complications other than glaucoma
- Consider intermittent angle closer in Patients with PEX and rapid progression despite “good” IOP-control