Change in visual acuity and need for low vision rehabilitation after intra-vitreal treatment for wet Age-related Maculadegeneration - a register based study from the Swedish Macula Register

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Registry Manager The Swedish Macula Register

No financial interests
What is AMD (age related macular degeneration)?
AMD (age related macular degeneration)

- AMD
  - 10% 65-74 år
  - 30% > 75 år
- ”Dry AMD” 85-90%
- ”wet AMD” 10-15%
Dry AMD
Age related macular degeneration

Normal fundus

AMD
Normal fundus OCT
Wet AMD

before treatment

after treatment
Wet AMD
New treatments for wet Intravitreal injection

- 2007 a new treatment for wet AMD
- Intravitreal anti-VEGF therapy
Intravitreal injektion av anti-VEGF
Natural course for wet AMD mean change in Visual Acuity (VA)
The Swedish Macula register

• A national register for treatment of wet AMD in.
• 80% coverage
• National results for AMD treatment concerning age, sex, type of lesion, frequencies of treatments and follow-up visits
• Medical outcome; distance visual acuity, near visual acuity and adverse events.
• Analyze and compare different treatments and their outcome
Proportion of population (age ≥ 70 år) in SMR per county in Sweden
Swedish Macula register (SMR) 2007-2015

- 22,353 patients
- 26,156 eyes

Number of registered patients and new eyes 2007-2015
Swedish Macula register (SMR) 2007-2015

- 378,176 visits
- 195,405 treatments

Number of visits and treatment 2007-2015
The Swedish Macula Register (SMR)

- Mean age for start of treatment is 79 years of age
- 64% of patients are female

August 2016
- 24,873 patients,
- 29,280 eyes
- 428,224 visits
- 232,020 treatments
- 99% of treatments are intra-vitreal injections (IVT)
# Choice of treatment anti-VEGF per clinic in Sweden 2015

<table>
<thead>
<tr>
<th>Clinic</th>
<th>Ranibizumab</th>
<th>Bevacizumab</th>
<th>Aflibercept</th>
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<tbody>
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<td>Akademiska Uppsala</td>
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<td>Borås SÄS</td>
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*Note: The image shows a bar chart representing the percentage of each treatment used in various clinics across Sweden in 2015.*
Median number of injections year 2007-2014
### Median number of injections for different anti-VEGF drugs

<table>
<thead>
<tr>
<th>Drug</th>
<th>Median number of injection</th>
<th>Number of Eyes</th>
</tr>
</thead>
<tbody>
<tr>
<td>Ranibizumab</td>
<td>4</td>
<td>749</td>
</tr>
<tr>
<td>Bevacizumab</td>
<td>5</td>
<td>740</td>
</tr>
<tr>
<td>Aflibercept</td>
<td>6</td>
<td>1501</td>
</tr>
<tr>
<td>Combination of different anti-VEGF</td>
<td>8</td>
<td>519</td>
</tr>
</tbody>
</table>
Outcome measure: improvement in visual acuity

% improvement 5-14 letters och ≥15 letters 2007-2014

- 5-14 bokstäver förbättring
- >15 bokstäver förbättring
Visual acuity ≥0,5 (vision for driving) after 1 year of treatment %

43 % of treated eyes have a visual acuity of more than 0,5 after 1 year of anti-VEGF treatment in Sweden
Female born 1926 wet AMD (RAP) diagnose right eye september 2011.
Preop VA: 67 letters ~ 0.65 and nearvision 8 p.
Left eye wetAMD, VA 0.01.
After 3 injections anti-VEGF: 67 letters ~ 0.4 och 6 p.
Continued treatment total 18 injections

2016-01-05 VA 68 letters, 0.5 and reading 6p
Individual patient report Swedish Macula Register
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No financial interests
Purpose

• To investigate how patients with neovascular age-related macular degeneration (neovascular AMD) treated with ranibizumab or bevacizumab respond to treatment in daily clinical practice.

• Risk of having poor vision (VA under 60 ETDRS letters or approximately 20/60 Snellen) is calculated for the treated eye after 1 and 2 years.

• Data from the Swedish Macula Register on the treatment received by 3 912 patients during 2011-2014 is reported.
Methods/Material

• Treatment naïve patients with treatment start between jan 2011 to oct 2012 treated with anti-VEGF ranibizumab or bevazicizumab for a two year follow up study period.

• Ranibizumab 3365 eyes and bevacizumab 547 eyes

• Baseline characteristics were age, sex, symptom duration before first visit and CNV sub-type.

• Two subgroups according to baseline VA (ETDRS), VA < 60 letters at first visit or ≥ 60 letters

• In Sweden, low vision centers provide visual rehabilitation in case of visual acuity of the better-seeing eye less than 60 letters (0.3 (approx 20/60) Snellen).
eyes with diagnosis wAMD at the first visit in the period 1 Jan 2011 and 31 Oct 2012 registered in the Swedish Macula Register. Follow up until 31 Dec 2014.

4 eyes with incomplete VA at first visit are excluded. 843 Snellen values were converted to ETDRS.

316 eyes previously treated for wAMD are excluded.

Only eyes treated with either ranibizumab or bevacizumab are included. 1271 eyes treated with other products than ranibizumab and bevacizumab or combination of those are excluded.

11 patients were not listed in the Swedish National Address Register and are excluded.

3365 eyes treated with ranibizumab
- 178 bilateral cases
- Complete 1st year follow up: 2324
- Complete 2nd year follow up: 1483
- Died within the 1st year: 133
- Died within the 2nd year: 305

547 eyes treated with bevacizumab
- 26 bilateral cases
- Complete 1st year follow up: 416
- Complete 2nd year follow up: 305
- Died within the 1st year: 13
- Died within the 2nd year: 34
Results baseline characteristics

• Baseline characteristics were similar between ranibizumab and bevacizumab treated patients.

• The median age of the patients was around 79 years old and more than 60% of the patients were women.

• Approximately 40% of the patients experienced neovascular AMD symptoms for less than 2 months before their first visit.

• The median VA at first visit was approximately 58 ETDRS letters (SD 15 letters).

• Around 57% of the patients had VA less than 60 letters at their first visit.
One and two year results

- Similar in both treatment groups.

- Median number of injections year 1 is 5.

- Total number of injections after year 2 are 7(SD 3.2) and 8(SD 4.5) for ranibizumab and bevacizumab respectively.

- Median VA difference year 1 is 3 letters (SD 15 letters).

- At 2 years the median change in VA from the first visit is 2 (ranibizumab) and 1 (bevacizumab) letters (SD 17 letters).

- Median VA after 2 years is 65 letters
Visual acuity -2 year results Swedish Macula Register compared to clinical trials
Natural course for wet AMD mean change in Visual Acuity (VA)
15 letters gain/loss after 1 and 2 years

**Bevacizumab**

- 15 letters gain
  - 1 year: [Bar chart]
  - 2 years: [Bar chart]
- 15 letters loss
  - 1 year: [Bar chart]
  - 2 years: [Bar chart]

**Ranibizumab**

- 15 letters gain
  - 1 year: [Bar chart]
  - 2 years: [Bar chart]
- 15 letters loss
  - 1 year: [Bar chart]
  - 2 years: [Bar chart]

- CATT as needed
- CATT monthly
- SMR (2 years)
- SRM (all patients)
- IVAN

Percent eyes (%) vs. time (years)
## Risk for VA < 60 letters ETDRS after anti-VEGF treatment

### VA < 60 ETDRS letters baseline

- 60% risk VA < 60 letters year 1 and year 2
- Patients older than 79 years have 18% higher risk of maintaining low VA
- No difference in risk depending on treatment choice

### VA ≥ 60 letters baseline

- 20% risk VA < 60 letters year 1 and 25% year 2
- Patients older than 79 years have 49% higher risk year 1 and 38% year 2 of VA <60 letters compared with younger patients
- No difference in risk depending on treatment choice
Conclusions

• Treatment outcome depends on VA at first visit. For patients with VA $\geq 60$ letters, the risk of having a VA lower than 60 letters after 1 or 2 years of treatment is around 20%.

• For patients with low VA at first visit ($< 60$ letters) the risk is around 60%.

• The risk of having VA $< 60$ letters doesn’t depend on the choice of treatment drug.

• Older patients have a higher risk of VA $< 60$ letters compared to younger patients.

• We observe for patients with low VA at baseline that the risk of remaining with a low VA for patients that had more injections than average is similar to those that had fewer treatments. This requires further studies.
Conclusions

• Treatment with anti-VEGF mainly maintains the VA level. Despite treatment, around 20% (baseline VA >60 letters) and 40% (baseline VA ≤60 letters) of the patients required vision rehabilitation after 1 and 2 years, respectively.
The Swedish Macula Register projects

ST-project

- Lower incidence of severe visual impairment after introduction of anti-VEGF in wet AMD - a population and register based study from northern Sweden (published 2016)
- Switching to Aflibercept in Ranibizumab Refractory Age-Related Macular Degeneration: a Real-World Experience from Sweden.
- Characteristica and prognos for patients after treatment for wet

Research projects

- Change in visual acuity and need for low vision rehabilitation after intra-vitreal treatment for wet Age-related Maculadegeneration - a register based study from the Swedish Macula Register
- Anti-VEGF- treatment for wetAMD: evaluation of treatment protocol and effect
- CATMAC Patients treated for wetAMD after cataract surgery
- Swedish Macula register– 7-year results
- Endophtalmitis register 3-year results
- Comparison 2 cohorter with different treatment regim in Skåne
- Low vision< 0,1 – treatment results
- Do comorbidities cause under treatment in patients with wAMD?
Thank you for your attention!

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