Reduced Incidence of Post-Injection Endophthalmitis with Pre-filled Syringes

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Lower rate of endophthalmitis was observed with pre-filled syringes (PFS) compared with VIALS.

Lower rate of endophthalmitis were noted when MD draws up drug from VIAL, as opposed to technician.

- Extra caution is warranted when drawing up drug from vials in the office.
- Consider having MD drawing drug from vials for intravitreal injections.
Acute endophthalmitis is rare but the most feared risk of intravitreal injections.

Study to:

- Assess the features of post-injection endophthalmitis and risk factors for developing endophthalmitis.
- Do pre-filled syringes prepared in a sterile fashion reduce endophthalmitis risk?
- Does physician drawing up of medication as opposed to technicians impact rates of endophthalmitis?
METHODS

- Retrospective review
  - All Intravitreal injections of VEGF inhibitors
  - 2014 through 2019
  - All 16 NJ Retina locations
  - 24 Retina specialists

- Technique
  - In office procedure
  - Povidine-iodine for ALL eyes
  - Speculum typically use
  - No face mask
  - Gloves not routinely used by MD
METHODS

- Identify eyes developing endophthalmitis after intravitreal injection
- Medications:
  - Bevacizumab (pre-filled by compounding pharmacy)
  - Ranibizumab (vial)
  - Ranibizumab (pre-filled syringe)
  - Aflibercept (vial)
RESULTS

- 325,902 injections over 6 years
  - Bevacizumab 32,045
  - Ranibizumab (vial) 93,073
  - Ranibizumab (pre-filled syringe) 77,925
  - Afiblercept (vial) 122,947
RESULTS

ALL ENDOPTHALMITIS (88 CASES):

Incidence endophthalmitis: 1 in 3704 injections (0.0270%)
- Bevacizumab: 1 in 3204 injections (0.0312%)
- Ranibizumab (vial): 1 in 4432 injections (0.0226%)
- Ranibizumab (PFS): 1 in 6494 injections (0.0154%)
- Aflibercept (vial): 1 in 2732 injections (0.0366%)

\[ P = 0.03 \]

However, only 37% culture positive
RESULTS

CULTURE POSITIVE ONLY:

Incidence endophthalmitis: 1 in 9586 injections (0.0104%)
- Bevacizumab: 1 in 10,682 injections (0.0094%)
- Ranibizumab (vial): 1 in 15,512 injections (0.0064%)
- Ranibizumab (PFS): 1 in 38,962 injections (0.0026%)
- Afiblercept (vial): 1 in 5344 injections (0.0187%)

P = 0.003
RESULTS: VIAL vs R-PFS

INCIDENCE OF ENDOPHTHALMITIS

ALL EYES
- VIAL medication: 1 in 3272 injections (0.0306%)
- R-PFS medication: 1 in 6493 injections (0.0154%)
  \[ P = 0.026 \]

Culture Positive ONLY
- VIAL medication: 1 in 7448 injections (0.0134%)
- R-PFS medication: 1 in 38,962 injections (0.0026%)
  \[ P = 0.011 \]
RESULTS: MD vs Technician Prepared Drug

ALL MEDICATIONS:
- MD drawn med: 1 in 5402 injections (0.0185%)
- Technician drawn med: 1 in 2991 injections (0.0334%)
  - \( P = 0.01 \)

FOR PFS MEDICATION ONLY:
- No significant difference in endophthalmitis incidence between MD prepared med vs Technician prepared med
What’s Different Between VIAL and PFS?
Why Lower Incidence with MD Drawn Med?

Possibilities:
- MD more familiar with sterile technique
- MD may have more dexterity manipulating needles and avoiding contamination
- MD feels more responsible (“The Buck Stops Here!”)
Conclusions

- Lower rate of endophthalmitis with PFS compared with VIALS (P = 0.026)
- Lower rate of endophthalmitis when MD draws up drug from VIAL, as opposed to technician. (P = 0.01)

- Use extra caution when drawing up drug from vials in the office
- Consider MD drawing drug for injections
- We welcome PFS for all intravitreal pharmaceuticals
Thank You!

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