Overview

1. short introduction

2. current practical and scientific experiences
   - Aetiologie
   - Prophylaxis
   - Treatment
   - Immunosuppression and recovery

3. organisational measures to cope with YPD
1. Introduction

- first description in late 1980s
  - rapid spread during 1990s
  - relatively stable since late 1990s
- juvenile racing and ornamental pigeons
  - age mainly 2 to 6 months
- seasonal occurrence
  - racing pigeons (Germany)
    - peak in July/August → first flights
  - ornamental pigeons
    - peak during winter → exhibitions

→ Association with stress and/or contact between birds from different lofts.
Course of disease

- flock
  - occurring often 3 to 7 days after flight/exhibition
  - acute course of disease, often variable
  - Morbidity: ~20-80%
  - Mortality: 0-20%
  - losses of subclinically affected birds during flights

- individual
  - mostly clinical recovery within 3-5 days
  - rarely peracute death
  - chronic disease caused by complicating factors
    - e.g. massive infection with Trichomas gallinae

Symptoms & therapy

- Symptoms
  - Inappetence, reduced general condition
    - first signs: pigeons ignore feeding signal
  - crop stasis
    - filled with water and feed
    - regurgitation
    - slimy diarrhea
    - weight loss

- antibiotic treatment
  - Colistin, Enrofloxacin, Furazolidon, ...
  - mostly rapid recovery (~2-3 days)
  - complicated courses: combination with Nitroimidazoles
    - Flagellates (Trichomonas spp., Spironucleus spp.)
2. current „knowledge“

- Aetiologie
- Prophylaxis
- Treatment
- Immunosuppression & recovery

Aetiologie still largely unknown

- main hypothesis 1: non-infectious
  - Stress-induced
    - flights, heat, vaccination, treatment, ...
  - dysbakteriosis
    - impaired intestinal flora

- main hypothesis 2: infectious disease
  - one (or more) pathogens
  - transmitted between lofts
    - flights, exhibitions, stray pigeons
  - stress and other factors influence course of disease

Quelle: D. Rubbenstroth (ungefähre Schätzung)
possible explanations

- stress
- infection ("crowding effect")
- new stress factor?
- altered genetics?
- novel pathogen

candidates for infectious agents

**Predisposition**
- Pigeon circovirus (PiCV-1)

**Trigger**
- Adenoviruses (PiAdV-1, FAdV-4)
- *E. coli*
  secondary pathogen
Adenoviruses

- Type I: pigeon adenovirus 1 (PiAdV 1)
  - impaired intestinal function
- Type II: fowl adenovirus 4 (FAdV-4)
  - inclusion body hepatitis, peracute death
- experimental reproduction of YPD-like disease
- Association with YPD?
  - Raue et al., 2005:
    - not detected in 45 YPD-affected pigeons
  - Stenzel et al., 2012:
    - PiAdV-1 detected in 2/40 diseased juvenile pigeons

Echerichia coli

- extremely variable
  - serotypes, genotypes, pathotypes, virulence genes, ...
- part of the intestinal flora of healthy pigeons
  - mainly in distal parts of intestine
  - low levels in duodenum/jejunum
- *E. coli* detection from swab or fecal sample:
  - NO diagnostic value!
Summary pathogens

- **PiCV-1**
  - role in predisposition cannot be excluded
  - most likely no trigger of YPD
  - possibly widely distributed before occurrence of YPD

- **E. coli**
  - precise role still unknown
  - defined „pigeon-pathogenic E. coli (PPEC)“ as causative agents?
  - many strains as secondary pathogens or just commensals?

- **PiAdV-1, FAdV-4**
  - rarely detected in YPD cases

- other known pigeon pathogens
  - pPMV-1, PiHV-1, Trichomonads, Hexamites, Salmonella, Chlamydia, ...
  - detected only sporadically in YPD cases

Conclusion 1

If YPD is an infectious disease
the causative agent(s) remain(s) still undiscovered
Conclusion 2

• YPD ≠ PiCV infection

• YPD ≠ adenovirus infection

• Do not cause confusion by using names suggesting causative agents which are not proven!
  • Aden-Coli

→ „young pigeon disease (YPD) syndrome“

2. current „knowledge“

• Aetiologie

• Prophylaxis

• Treatment

• Immunosuppression & recovery
**prophylaxis**

- unspezific
  - YPD induction before flights
  - „adaptation“ of pigeons to stress
  - induction of immune system

- specific
  - vaccination against *E. coli*

- drugs and other products

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**YPD induction**

- **Goal:**
  - disease outbreak before racing season
  - „immunity“ during racing season

- exposure to material from diseased birds
  - vomit/diarrhea from outbreak in previous year via feed

- intentional exposure to stress factors
  - balloons in the loft
  - abrupt change of light regime
  - basketing overnight, many trainings flights, ...
  - vaccination
  - ...

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adaptation to stress / immune stimulation

- Goal:
  - enhanced stress resistance / enhanced immune function
  - prevention of YPD outbreak

- adaptation to stress
  - balloons in loft
  - basketing overnight, repeated trainings flights, ...

- unspecific stimulation of immune system
  - not too much hygiene
  - repeated vaccinations
    - pPMV, Salmonella, pigeon poxvirus

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drugs and other products

- disinfection or acidification of drinking water
- Oregano or other herbs
- carrot soup
- dates
- pre- and probiotics
- immunglobulines (chicken, pigeon, cattle)
- ...

- antibiotic mixtures
  - repeated “prophylactic” short-term treatments

- elimination of flagellates (trichomonades, hexamites)
  - may prevent complicated courses of YPD
**Vaccination against E. coli**

- autogenous vaccines
- commercial vaccines for other animal species?

- problem:
  - serologically extremely variable (≥ 200 O types)
  - low to no cross-protectivity
  - missing knowledge on relevant serotypes in YPD
  - no basis for educated selection of serotypes/vaccines

- experiences:
  - no systematic investigation of protective effect
  - highly variable personal reports
    - "no effect at all"
    - "protection against outbreak in some vaccinated lofts"
    - "no protection against outbreak, but attenuated disease"

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**Summary – prophylaxis**

- no systematic investigations

- based on personal reports
  (breeders, manufacturers, veterinarians, ...)
  - often single cases
  - often combination of different measures
  - often not precise, incomplete, ...

- experiences very variable, often contradictory

- so far no universal and reliable prophylaxis
2. current „knowledge“

- Aetiologie
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antibiotic treatment

- Colistin sulfate
  - usually good efficiency
  - rapid clinical recovery within 2-3 days

- further antibiotic substances
  - gyrase inhibitors (Enrofloxacin)
  - Furazolidon
  - Ampicillin, Amoxicillin
  - Neomycin

- if necessary: additional/subsequent Nitroimidazole treatment
  - elimination of flagellates (trichomonads, hexamites)

- increased frequency of antibiotic resistances?
**non-antibiotic treatment**

- instead of or in addition to antibiotic therapy

- feeding
  - easily digestible (e.g. oat flakes) or raw fibre (e.g. rice, barley)
  - complete feed restriction for 1 to 2 days

- drinking water
  - electrolytes

- restricted free flight for several days

- additional supportive measures
  - drinking water disinfection or acidification, oregano, other herbs
  - carrot soup, pectins, pre- and probiotics, ferric preparations
  - immunoglobulines
  - ...

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**2. current „knowledge“**

- Aetiologie

- Prophylaxis

- Treatment

- **Immunosuppression & recovery**
Recovery after YPD outbreak

• All pigeons have to be 100% fit for participation in flights!

• time required for complete recovery dependent on ...
  • severity and duration of disease
  • efficiency of treatment

• assessment of breeders and veterinarians extremely variable:
  • “as soon as they are (optically) healthy” / “as soon as they fly normally”
  • “few days”
  • “5-7 days”
  • “10-14 days”
  • “in extreme cases up to several weeks”

• “Many breeders basket their birds much too soon!”

2. current „knowledge“ - summary -

• Aetiology and pathogenesis still barely understood
  • indications for infectious aetiology
  • indications for immunity of reconvalescent birds

• Treatment is possible
  • complete recovery takes time
  • longer recovery periods required?

• so far no reliable prophylaxis
  • not expected to change in due time

• need for improved handling of YPD outbreaks
3. organisatorial measures

How to prevent YPD outbreaks during racing season?

How to avoid pigeon races during YPD outbreaks?

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