

Update on „Young pigeon disease (YPD) syndrome“

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FCI Meeting, Halle, 2.3.2016

Overview



1. short introduction
2. current practical and scientific experiences
 - Aetiologie
 - Prophylaxis
 - Treatment
 - Immunosuppression and recovery
3. organisational measures to cope with YPD

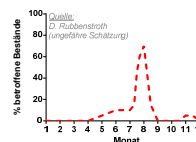
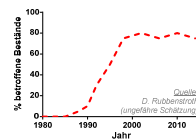
1. Introduction



History und occurrence (Germany)



- 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 variabel
 - Morbidity: ~20-80%
 - Mortality: 0-20%
 - **losses of subclinically affected birds during flights**
- individual
 - mostly clinical recovery within in 3-5 days
 - rarely peracute death
 - chronic disease caused by complicating factors
 - e.g. massive infection with *Trichomas gallinae*

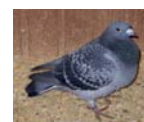


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Symptoms & therapy



- 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., *Spiroucleus* spp.)



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2. current „knowledge“



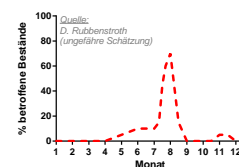
- **Aetiologie**
- Prophylaxis
- Treatment
- Immunosuppression & recovery

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Aetiologie still largely unknown

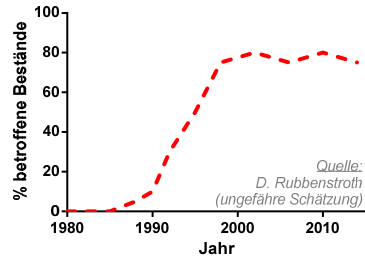
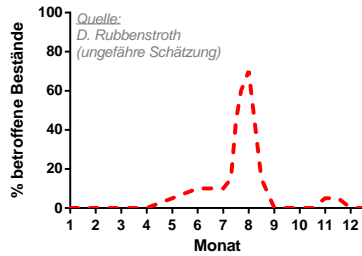


- main hypothesis 1: non-infectious
 - Stress-induced
 - flights, heat, vaccination, treatment, ...
 - dysbakteriosis
 - impaired intestinal flora
- main hypothesis 2: infectious disease
 - one (or more) pathogens
 - transmitted between lofts
 - flights, exhibitions, stray pigeons
 - stress and other faktors influence course of disease



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possible explanations



- stress
- infection („crowding effect“)



- new stress factor ?
- altered genetics ?
- novel pathogen



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candidates for infectious agents



Predisposition	Trigger
<ul style="list-style-type: none"> • Pigeon circovirus (PICV-1) 	<ul style="list-style-type: none"> • Adenoviruses (PiAdV-1, FAdV-4) • <i>E. coli</i> <p style="text-align: center; background-color: #add8e6;">secondary pathogen</p>



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

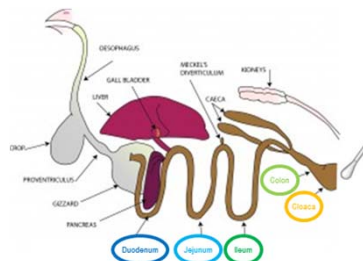


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Echerichia coli



- 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 !**

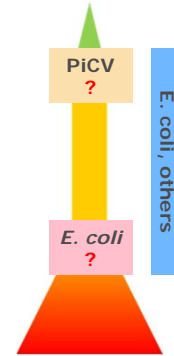


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Summary pathogens



- 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



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Conclusion 1



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



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Conclusion 2



- YPD \neq PiCV infection
- YPD \neq adenovirus infection
- Do not cause confusion by using names suggesting causative agents which are not proven !
 - Aden~~X~~-Coli

→ „young pigeon disease (YPD) syndrome“



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2. current „knowledge“



- Aetiologie
- Prophylaxis
- Treatment
- Immunosuppression & recovery

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prophylaxis



- unspezifisch
 - YPD induction before flights
 - „adaptation“ of pigeons to stress
 - induction of immune system
- spezifisch
 - vaccination against *E. coli*
- drugs and other products



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
 - ...



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
- immunoglobulines (chicken, pigeon, cattle)
- ...
- antibiotic mixtures
 - repeated „prophylactic“ short-term treatments
- elimination of flagellates (trichomonades, hexamites)
 - may prevent complicated courses of YPD



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Vaccination against *E. coli*



- autogenous vaccines
- commercial vaccines for other animal species ?
- problem:
 - serologically extremely variabel (≥ 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



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2. current „knowledge“



- Aetiologie
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- **Treatment**
- Immunosuppression & recovery

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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**

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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. organisational measures



How to prevent **YPD outbreaks during racing season** ?

How to avoid **pigeon races during YPD outbreaks** ?

Vielen Dank !



Klinik für Geflügel

- Dr. Lydia Teske
- Dr. Arne Jung
- Prof. Silke Rautenschlein



- Prof. Dr. Kohaus Förderverein

praktizierende Tierärzte

- Rene Becker
- Dr. Elisabeth Peus
- Dr. André Pfützner
- Burkard Sudhoff
- Dr. Matthias Warzecha

- Prof. Erhard Kaleta

Züchter

- Walter Schlenk
- Michael Stumme