Monday, September 5th, 2022

Men-animals relations. Historic aspects and evolution

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The benefits of animal domestication for humanity evolution is widely recognized

Domestication has been based on commitment from animal owners to protect animals from predators, to provide conditions for appropriate feeding, disease prevention and treatment and housing when necessary . Men owners always exerted rights on their domestic animals. Indeed, domestication led to genetic selection linked with the needs of human communities: mainly work, protection and war, animal origin food, cultural events, soil fertilization.

A majority of domestic animal cannot survive without owners protection and care.

Many voices at global level are advocating for an evolution of the historic deal between men and domestic animal and some so called “antispecists”are proposing to ban the concept of man superiority and even the right to have domestic animals for any purpose.

In addition to philosophical controversies, antispecists are using other arguments linked with health and environment based on scientific publications often supported by activist NGOs. In front of these controversies the answer must be science based, using sources with full independence.

However, it is always recommended to recall the strong benefits of domestic animal for mankind.

- Food and high-quality nutrition.
- Soil fertilization versus chemical products.
- Cultural and sport key partners.
- Providers of leather, wool and skin clothes.
- Companions of billions of families.
- Key factor of poverty reduction in developing countries.
- Unavoidable element for scientific research for human and animal health.
- High genetic diversity.

Tuesday, September 6th, 2022

Why do many veterinarians no longer use the clinical examination of ruminants on a regular basis?

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Objectives: Clinical propaedeutics provides the preliminary knowledge for diagnosing diseases, their therapy and prophylaxis. In the clinic, the diseases are discussed and the aetiology (cause of the disease), pathogenesis (development of the disease) or pathophysiology, specific symptoms, diagnosis and differential diagnosis, prophylaxis and therapy are dealt with. This then results in the prognosis (prediction), which is important for the animal owner, i.e. the veterinarian‘s statement about the further course of the disease (duration, outcome, treatment costs).

Material and methods: Diseases in animals and humans are recognised due to particular changes in the state of life. These deviations from the physiological state are the disease manifestations or symptoms.

A distinction is made between 1. subjective symptoms, which the patient feels and reports to the doctor and 2. objective symptoms („signs“), which the doctor detects without the patient influencing them. Since animals usually lack the ability to communicate subjective sensations, the veterinarian has to deal mainly with symptoms that have to be objectively recorded.

Most misdiagnoses are not so much due to technical inability, lack of experience or wrong thinking, but simply due to forgetting to exhaust a number of diagnostic possibilities.

There are existing different types of diagnosis:

1. Aetiological diagnosis: not only an organ localisation, but also the cause and type of disease (e.g. inflammation, degeneration) could be established without difficulty.
2. Provisional diagnosis (tentative diagnosis): The disease cannot be identified with certainty.
3. Functional diagnosis: A dysfunction of one or more organs is established without proving the exact nature of the organ disease in question.
4. Organ diagnosis: Localisation of the disease in a specific organ.
5. Symptomatic diagnosis: Cause and affected organ could not be established, therefore only a specific, concise symptom is cited as diagnosis.

There are two principles regarding the type of examination:

Examination by organ system (gastrointestinal tract, respiratory tract, circulatory and lymphatic systems, etc.) and topographical examination (includes all organs and organ systems in each region of the body).

General examination: This covers all organ systems and should always be carried out at least during the initial examination of a patient. In intensive animal husbandry, the basic examination procedure is modified and the points of anamnesis and environment are dealt with in particular detail (checklist).

Special examinations: If the general examination leads to the suspicion that a certain organ system is affected (e.g. skin, sexual apparatus or nervous system), this organ system is examined in more detail in a special examination. The special examinations supplement the simple examinations with special diagnostic procedures that are usually technically complex and are only used in certain cases (e.g. urinalysis, blood tests, diagnostic imaging procedures, ECG).

Results and Conclusions: The importance of clinical examination of cattle directly in the barn during the first visit of a sick animal to determine the disease is shown with the help of some specific examples (including use of percussion to differentiate respiratory diseases; differentiation of all different forms of mastitis; differentiation between primary and secondary enteritis in calves, etc.).

Once the prognosis has been established, a targeted therapy (e.g. much less use of antibiotics and other drugs; more sustainable and cheaper way of treatment) can be carried out. The successful therapy process thus achieved cannot be expected from experts via telephone without a clinical examination (unfortunately, nowadays one finds widespread telephone service in many countries of the world).

References:

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Controlling epidemic bovine diseases in the last decades: What can we learn from it?

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Objectives: The main reason for the foundation of veterinary schools in the middle of the 18th century was, besides the need of veterinarians for the horse stocks of the armies, the control of the then raging infectious animal diseases. First and foremost, rinderpest threatened the economies of Europe. In many areas, the disease destroyed up to 75% of the cattle population. The Netherlands even lost almost its entire cattle population to the disease between 1711 and 1717. As a fierce and rapidly spreading disease, rinderpest usually occurred in the wake of large campaigns, as at that time the armies often carried large herds of oxen as living provisions. Nowadays, international trade in animals and animal products, the spread of vectors with other traded goods, and due to climate change, and international travel, threaten cattle populations. The aim of this paper is to show, with some examples, the measures taken in recent years in countries with intensive milk production to control or eradicate the main epidemic infectious diseases in cattle.

Materials and methods: The main focus is on the control of tuberculosis, foot-and-mouth disease, bovine viral diarrhea/mucosal disease, paratuberculosis and, as an example of an arthropod-borne viral disease, bluetongue, which was introduced into northwestern Europe in 2006. The influence of modern infection epidemiology, new diagnostic methods and new vaccines on the control of such infectious diseases is described, as well as the influence of non-medically indicated, but rather eco- and trade policy-driven choices of control measures. The causes of failures or new outbreaks are also discussed.

Results: Due to their zoonotic and/or economic importance, the control of the most important infectious diseases in cattle is now regulated by the World Organisation for Animal Health (WOAH / OIE), the European Union animal health law and other supranational and national regulations. Irrespective of this, the following basic principles should always be observed with regard to the infectious diseases to be controlled and the choice of control strategy: Zoonotic and economic importance of the infection and its prevalence, characteristics of the pathogen, the severity and course of the diseases, its etiology and transmission routes, potential reservoir of the pathogen (examples: paratuberculosis, tuberculosis), involvement of vectors (example: bluetongue), presence of latently or persistently infected animals, predictive value of available test methods, availability and efficacy of vaccines, prospects of success of control or eradication programs and their acceptance by livestock owners, and their cost-effectiveness. This is because the attainability of a control target is often based on overly optimistic assumptions, and likewise, verification of the efficacy of such intervention strategies has been rare. In addition to the existing infection prevention measures, breeding for disease resistance is likely to become much more important in the future in connection with marker-assisted selection in the cattle sector as well.

Conclusions: As in the days of the first modern veterinary schools, the control of animal diseases will remain an important veterinary task in the future. For despite all the progress made, there are still numerous challenges in this field that have not yet been satisfactorily resolved, such as the control of bovine tuberculosis or paratuberculosis in some countries. In addition, there is always the risk of pathogen introduction (example: foot-and-mouth disease) into disease-free countries or the emergence of new diseases. However, the field of infectious disease epidemiology as well as clinical buiatrics is obviously neglected at some veterinary schools in the course of shifting the focus of education to companion animals. But farm animal medicine is more than laboratory diagnostics and microbiology, because especially in the early detection of a disease outbreak, the recognition of the first clinical symptoms is and remains of crucial importance.

Wednesday, September 7th, 2022

Successful dairy farming

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Demand for milk and dairy products will double in the next 50 years according to the United Nations. Increased populations in Africa and South Asia will increase demand for milk and dairy products in regions where milk yield per cow is among the lowest worldwide. Climate change will make it more challenging to meet this demand, and cattle that are more heat tolerant will increase in warmer regions. Milk yield per cow globally needs to increase from 3,000 kg in 2020 to 6,000 kg in 2072. Half of this increase will be associated with improved genetics of dairy cattle, particularly through application of genomic technologies across breeds. This will require better records of ancestry and greater use of artificial insemination with semen from superior bulls. More genetic emphasis will be on changing milk constituents rather than volume produced per cow. Increased milk output will require improved feeding and management and an increase in average herd size, because yield increases as cows move into larger herds, which typically provide better feed and management. Novel breeds and crossbred cows will become more productive, particularly in areas where increased temperatures will subject cows to more stress. Health of dairy cow will improve through development of better vaccines and novel health products that will replace antibiotics. There will more focus on understanding and managing epigenetics of dairy cattle, with particular focus on body condition scores and specific periods, including development in utero, the first 3 months after birth, during the onset of puberty and during first pregnancy. All of this will evolve into components of genetic evaluation systems. There will be more emphasis on managing microbiomes of dairy cows, particularly microbiomes of the rumen, digestive tract, udder, and uterus. For example, specific microbes may be injected, using ultrasound-guided technology, into the amnionic sac of the fetus to provide it with the desired microbiome before birth. Technologies developed for dairy cows will be applicable to dairy buffalo, goats, sheep, and other dairy mammals. A major challenge to improving milk production worldwide will be changing the culture of dairy farming in countries where output per cow is low. This will require improved genetics, improved feeding, improved healthcare, and often will require dairy farmers to pool milk cows into jointly owned herds to acquire and apply more advanced technologies. More details are available at Britt et al. 2018. J. Dairy Sci. 101 (5): 3722-3741 and Britt et al. 2021. Animal 15 (2) 100298.