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Greasy pig disease- Anexudative dermatitis in low agedpigs

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Skin disease in pigs is a very common ailment as the animal ventures in the unhygienic environment and skin abrasion and other skin lesions occur due to several aetiologies such as a thorn, biting with inmates, interspecies attack by predators. Ghungroo pigs area little more vulnerable to skin disease due to their folded or wrinkled skin over the facial and foreparts of the body (Patra et al., 2014). Greasy pig disease is a bacterial disease caused by *Staphylococcus hyicus*. The bacteria is usually commensal to the porcine skin environment.The disease is characterized by the development of scab over the skin surface particularly around the face, axilla, groin, ear, nose, back, thigh and abdomen areas. It is the most common dermatitis in almost all pigs with different predisposing factors such as injury of the skin, fighting injury, bitting injury, suckling injury with teeth, and any other injury on the skin in the low age group of animals particularly in piglets and growers but the adult animal may also be affected.The higher incidence of the condition is that during the last phase of pregnancy the bacterial counts in the vaginal canal increase and the piglets are contaminated during the birth process.The bacterial infection may happen even within a week of postnatal piglets.

AETIOLOGY

The disease is due to infection one Gram positive bacteria *Staphylococcus hyicus.*However, there are several other predisposing factors also responsible. The exudative epidermitis may be complicated with other co-morbidity with parvovirus and poxvirus causing vesicle formation over the skin,ringworm infection.Nutritional deficiency of vitamin A, D and Zinc,mycotoxins, Pityriasisrosea- a pustularpsoriasiform dermatitis due to genetic disorder and stress. Exoparasitic infestation like a tick, mange, lice etc.Poor farm hygiene and lack of other bacterial contamination on the skin surface.Congested farmhouse with high environmental stress and immune deficiency in piglets.

TRANSMISSION

The source of infection is not well known but gilt or sow may be the carriers from the previous infection. The bacterial culture may remain in the vaginal and preputial secretions. The sow and boars discharge the organisms which are also traceable around the periphery of piggery. The sharp eye teeth of piglets contribute to infect the piglets during the fighting and biting. During feed and milk feeding competition each piglet tries to grab feed out of competition there may be bacterial transmission through injury. The piglets bite other piglets and making injury to other piglets. The wound is contaminated with the *Staphylococcushyicus*and the bacteria can enter the piglet's body (Foster, 2012).

DEVELOPMENT OF EXUDATIVE EPIDERMIS

As the primary cause of the condition due to Staphylococcus hyicus with its different serovars. The production of may aggravate due to several predisposing factors and conditions. Although the sole bacterial infection causing the condition is rare.Skin injury and other causes that damage skin integrity such as fighting, biting, traumatic injury, floor roughness, even with infection of pox,vesicular disease,etc secret greasy material or even the injury is covered with a film of a fecal smear.This greasy parts with exudates help the propagation of bacterial mass. Environmental factors such as humidity,wetness and hot conditions may aggravate the production of exudates over the injured part of the skin. A mass of exudatesis accumulated over the skin surface and the bacterial propagation spread along all the sides. The initial lesions enlarge and coalesce to form a bigger lesion. Excess sebaceous secretion and serum oozing accumulate over the skin lesions. It gives rise to a greasy and moist appearance with brown to a mild yellowish hue. Formation of crusts, cracks, and fissures on drying of the exudates. Loss of fluid and serum causes dehydration of the affected pigs. Although, the neutrophils appear at the site of infection but escape phagocytosis due to certain antimicrobial protein expression.Moreover, coagulase is produced which helps in the formation of a fibrin clot that also helps to escape phagocytosis. Exfoliative toxins are considered the most important virulent factor for porcine keratinocyte cells to cleave (Nishifuji*et al*..2008).

CLINICAL MANIFESTATION

The incubation period may be as low as 24 hours but it may extend prolong with the precondition of skin injury. The appearance of brownish dark scab formation over the skin surface particularly at shoulder, neck from where the lesions may spread all over the body. The sucklings are shown more severe form of the condition even death in the acute stage while aged piglets show a less severe form. Other affected parts of the body are the flanks, outer side of the ear, The skin becomes wrinkled and thick due to the accumulation of exudates, and the affected skin shows peeling off (Fig-1). Before peeling a dark necrotic tissue is formed. It appears that the affected skin surface oily that is why the name of the disease is called greasy pig disease. The death in piglets due to electrolyte and fluid imbalance. If the sow is affected during the pregnancy the immunity may be transmitted to the piglets and the infection in piglets be less severe, only spotted lesions are observed. The prevalence rate may be as high 80% of the piglet population.

Fig-1: Skin showing exudative dermatitis in Ghungroo pig

IN PIGLET: The clinical signs and lesions may be severe even after 24-48 hours postnatal. Lesions can be seen at flanks, in between legs, face and ears. The skin becomes very rough and wrinkled with the production of flakes. There may be necrosis of the affected parts of the skin. Diffuses lesions and wound complications may lead to death due to dehydration and hypoprotemia.death may occur in younger pigs within 5-10 days of clinical signs.

WEANER: The weaners are comparatively shown less severity than piglets. The lesions may be similar to that of piglets. In weaner, the infection showing clinical signs a few days after weaning. Brown dermatitis can be seen on the skin of the face, flank, ventral parts of the legs and abdomen. The lesion may spread all over the skin surface. The damaged skin may be showing ulcerative. Progressive changes of the skin may turn into a black greasy rough texture. The weaner piglets may die of exotoxins produced by the bacteria. Several toxins are produced such as shock syndrome toxins, exfoliative toxins (ExhA, ExhB, ExhC, ExhD, SHETA, and SHETB) which are responsible for exfoliation of the skin and pathogenicity of the skin (Andersen, 1998).The disease course may 10-15 days. The death rate out of the disease may 10-15%.

Prevalence of the disease may be seen in adults but the severity is not much and mortality is very rare.

PATHOLOGY AND LESIONS

The affected pig found to be weak, dehydrated and emaciated with changes of skin textures. There may involvement of lymphnodes with edematous swelling. The kidney may be showing white precipitation. Microscopic examination of skin section may show the micro-abscess under the superficial layer of skin (dermis). The thick scab formation on the skin and secretion of toxins that absorbs fluid from the system causes greasiness.

DIAGNOSIS

The disease can be diagnosed with the clinical characteristic signs considering the age of piglets and pigs. The piglets are mostly affected much after birth within 1-5 weeks. The greasy pig disease needs to be differentiated with mange which is clinically very similar. History of skin injury followed by skin exfoliation and greasiness of affected skin are indicative of greasy pig disease. Isolation and identification of the organism are the diagnostic tools that differentiate mange and greasy pig disease.Pathological lesions and histopathological study of the skin and other tissue to find out the involvement of the bacterial species. An ELISA can be assayed to find out the antigen and antibody involvement. Toxin profiling and identification with PCR can be made (Wang, *et al*.,2016). Isolation of toxins and characterization is another diagnostic tool. Several other similar skin conditions such as photosensitivity,deficiency of zinc (parakeratoses), pig pox, insect bites, abrasion, abscess formation may be differentiated.

THERAPEUTIC INTERVENTIONS

The organism*Staphylococcus hyicus*is a Gram positive bacteriathat could be treated with sensitive antibiotics. Before treatment, antibacterial sensitivity is needed (Wegener,*et al*., 1994) for successful therapy. The antibiotic may be given for three days. Generally, Amoxycillin, oxytetracycline, ceftiofur, cephalexin, gentamicin, lincomycin and the parent beta lactam penicillin are useful (Park *et al*.,2013). Long acting antibiotic is effective to

avoid reputation in a day. The parenteral as well as topical application of antibiotics provide good results. Severe oozing and release of exudates leading to severe dehydration of the patient. Therefore, need to provide rehydration therapy along with minerals supplements. The farm is severely affected byan area that may be vaccinated with an autogenous vaccine. Feeding of sufficient colostrum to the piglets to combat infection. A dose of vitamin A may be given intramuscularly or orally to regenerate the skin tissues.

PREVENTIVE MEASURES

Avoid fighting during the early age of pigs that may lead to skin injury, mixing of different aged pigs and piglets are to be restricted to avoid fighting and biting. After birth, a dose of antibiotics may be given to restricting infection from sow origin. Teeth clipping is practiced in the early age of piglets to avoid biting. Once the skin injury occurs, it may be treated immediately with the antiseptic and antibiotic application (savlon, ethanol 70%, providone Iodine etc) to avoid bacterial colonization. Avoid the soiling of the wound so that infection may not be attached. If the pig farm locality is vast and infections prevails an autogenous vaccine may be developed for younger pigs

ECONOMICS

The disease is a cutaneous condition it affects the skin luster and shiny condition. Skin is the index of the value of food animals. The disease also affects the normal growth of pigs. Due production of exudates several haematobiochemicals are secreted through the exudates that cause low body growth. In complicated cases irritation also causes the growth rate of growing pigs although the disease is a nonirritating one. The economic loss also due to therapeutic intervention with medicine and surgical items as well as labour cost. Overall 10-15% growth is set back. The morbidity also varies ranging 10-80%. The mortality is very low 5-10% with a complication with other conditions. Therefore economic loss due to medicine, surgical,management cost, low feed conversion ratio, mortality, and skin damage.

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