Short Communication
DOI: https://doi.org/10.62418/ijvph.10.2.2024.89-92

Sarcoidosis in Polo Ponies: Case Study of Argentine-Cross Breeds

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(Received: 4th September 2024 | Accepted: 15th December 2024)

Abstract

Equine sarcoid is the most common tumour of horses and accounts for over half of all equine skin tumours. Six different types of sarcoids based on gross appearance and clinical behaviour have been described including occult, verrucous, nodular, fibroblastic, mixed and malevolent. Physical examination was done by the over-reaching of horse while galloping during polo games before 8-10 months ago. The history was reported for each one, in addition clinical signs with morphological and histopathological examinations. On histopathology, lesions appeared ashyperkeratosis and hyperplastic changes at the cross section of the hair follicle shaft. Cross section of rete pegs indicated characteristic of sarcoid histopathology alteration where rete pegs extended deep into the dermis. The microscopic change also showed an interlacing fibrous connective tissue with collagen pattern (red circle) and spindle shaped fibrocytes indicated characteristic histopathologic changes seen in sarcoid cases.

Keywords: Sarcoidosis, Histopathology, Argentine-cross polo pony

Sarcoidosis is a disease characterized by the growth of tiny collections of inflammatory cells (granulomas) in any part of the body (Offer et al., 2024). The most common sites in human are the lungs and lymph nodes but it can also affect the eyes, skin, heart and other organs (Baughman et al., 2012; Baughman et al., 2016). Sarcoid is the most common skin tumour of horses, accounting for 40% of all equine cancers. They affect breeds of all ages and both sexes. Most skin lumps in horses that are non-painful and non-itchy are sarcoid, whereas painful lumps are often due to infection and itchy lumps to allergies. They are persistent and progressive skin lumps that occur mainly around the head, in the axilla and the groin area, as well as developing wounds where they can be confused with 'proud flesh' (exuberant granulation tissue) (Chen and Mollar, 2011). Sarcoid disease does not usually self-cure and affected horses often develop multiple sarcoid at once or serially (Chopra et al., 2020). Sarcoid is caused by bovine papilloma virus (BPV). However, it appears that the virus requires genetically susceptible horses in order to be affected, in other words, not every horse exposed to the virus will develop sarcoid whereas those that are genetically susceptible are likely to keep developing sarcoid (Christen et al., 2014).

As the susceptibility persists, horses that have been successfully treated for sarcoidosis often get them again. The virus becomes incorporated into the DNA of infected skin cells and causes transformation (mutation) of those cells into tumour cells. This is not unique to the horses (King, 2008; Kamangar et al., 2014) as papilloma viruses do this in other species as well, notably in humans where papilloma viruses cause cervical cancer in women (Martens et al., 2001; Nunes et al., 2012).

It is possible that sarcoid spreads contagiously and this is something that has worried some people but, as yet, the ability for sarcoid to transmit by either direct horse-to-horse contact or indirectly by flies is unproven (Christen et al., 2014). Although parts of the virus (DNA and protein) have been detected on flies, infectious (whole) virus has not been detected. Currently, there is no evidence to suggest that horses affected by sarcoid are a threat to others. A range of appearances and behaviours are shown by this disease because various types of sarcoids have different levels of aggression and need different management style (Kamangar et al., 2014).

Three cases of horses from the same breed Polo Pony aged 15, 10 and 8 years, respectively and all used in polo games. Physical examination was done by the over-reaching of horses while galloping during polo games about 8-10 months ago. The history was reported for each one, in addition, clinical signs with morphological and histopathological study were done according to Luna and Lee , 1968 (Offor et al., 2021).

History of manager indicated that groom has not managed the wound properly and over the year it became progressive to bigger size. In one case, the wound did not affect the movement or gait of the horse. On physical examination, the temperature was 37.1°C, 37.3°C, 37°C respectively. Heart rate was 36, 38 and 39 per minute respectively. The respiratory rate was 7 in

all three and CRT was more than 2 seconds. The primary complaints for one of the horses were the presence of nodules on the distal ventral part of the horse neck since procurement two years ago. The nodules did not resolve even after treatment using Centrigen spray given by the owner and reported that the nodules were increased in size over time and started oozing purulent discharge for about few months ago when the horse started rubbing the nodules onto the stable wall.

During physical examination of all three horses, all the vital parameter including pulse, respiratory rate and body temperature were within the normal range. GIT sound was normal and capillary refill time (CRT) was less than 2 seconds.

Morphological study:

The nodule on the right side in the neck region was 2.5 cm in diameter X 2 cm height which was ulcerated and appeared as exuberant granulation tissue. The left nodule was (3 cm diameter X 3 cm height) which appeared as hyper- keratinized nodule (Figure 1). Laboratory Diagnostic works included impression smears from the ulcerated nodules and tissue biopsy from non-ulcerated nodules.

The site and location of the lesion in the other two horses were on the medial caudal region of the left forelimb pastern joint (Figure 2). The lesion mass was 3, 2.5 and 3.2 CM in diameter, respectively. Biopsies were taken from the lesion mass, fixed in neutral buffered formalin and sent for histopathological examination for diagnosis and confirmation the true nature of the lesion mass.

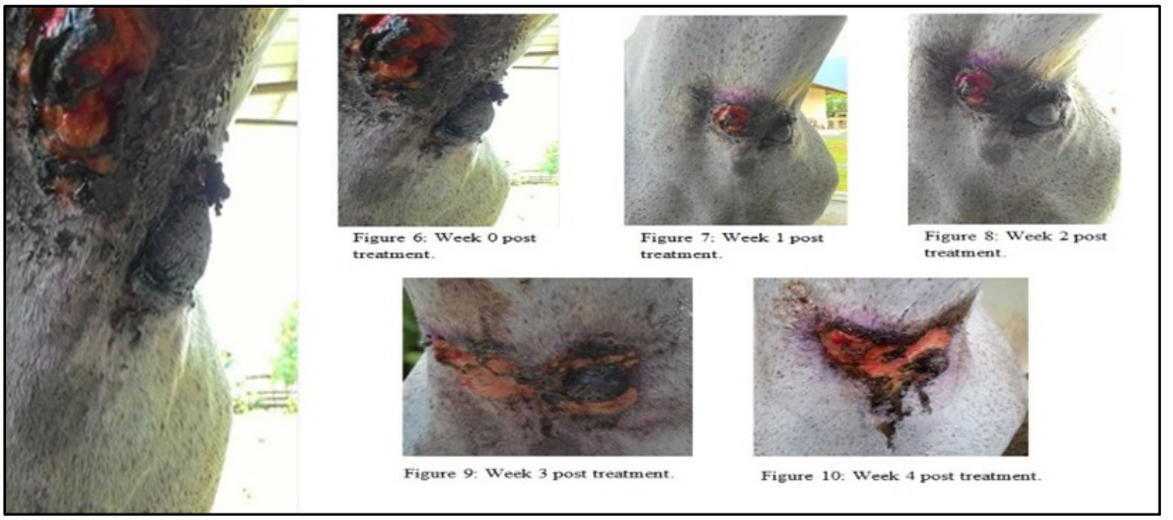

Figure 1: Nodules on both sides of the distal ventral part of the horse neck

Figure 2: Photos showing lesion on the medial caudal region of the left forelimb pastern joint

Histopathological study:

Impression smear showed the presence of polymorphonuclear leukocytes and other inflammatory cells including lymphocyte, macrophages and hyper-segmented neutrophils which indicated that the wound was already at chronic stage (Figure 3).

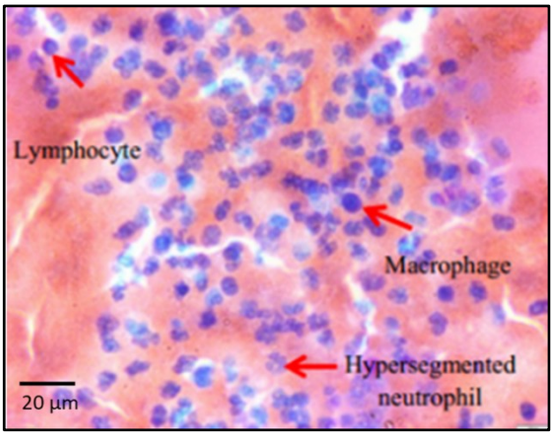

Figure 3: Impression smear shows inflammatory cells

On histopathology, lesion appeared ashyperkeratosis and hyperplastic change at the cross section of the hair follicle shaft. Cross section of rete pegs indicated characteristic of sarcoid histopathology alteration where rete pegs extended deep into the dermis (Figure 4 A and B). The microscopic change also showed an interlacing fibrous connective tissue with collagen pattern (red circle) and spindle shaped fibrocytes indicated characteristic histopathologic change seen in sarcoid cases (Figure 5 A and B).

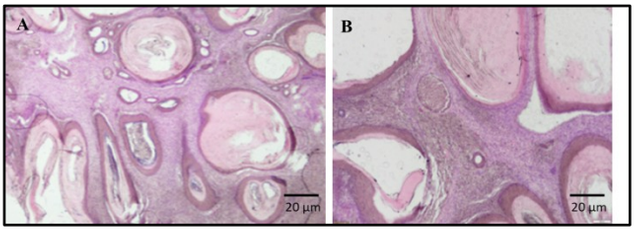

Figure 4: A: Hyperkeratosis and hyperplasia at the cross section of the hair follicle shaft. B: Cross section of rete pegs indicates characteristic of sarcoid where rete pegs extending deep into the dermis (H&E X40)

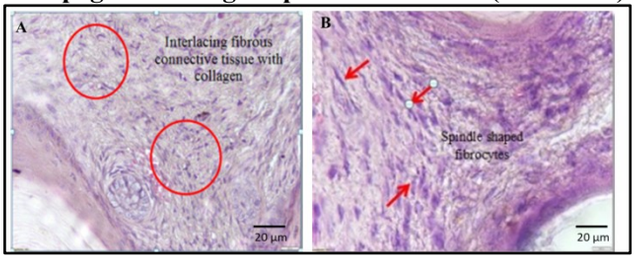

Figure 5: A: Clear interlacing fibrous connective tissue with collagen pattern (red circle) indicates characteristic histopathology change in sarcoid; B: Spindle shaped fibrocytes (red arrow) (H&E X40)

Sarcoids are persistent and progressive skin tumors. Genetically susceptible horses develop sarcoid as a result of exposure to bovine papilloma virus (BPV). Lesions of sarcoid commonly appear on the head, face, chest and groin but can develop anywhere on the skin. Although it's believed that sarcoids are a form of cancer and are usually locally invasive but do not spread to other organs. Sarcoidosis is a disease characterized by the growth of small groups of inflammatory cells (granulomas) in any part of the body and in most cases, it affects the lungs and lymph nodes. But it can also affect the eyes, skin, heart and other organs.

The skin is frequently affected by sarcoidosis. In patients of Scandinavian descent, sarcoidosis often begins as red, slightly raised, painful lumps (erythema nodosum), often on the chin and is associated with fever and arthralgia (Park et al., 2018). Symptoms may resolve within a month or two and are less common in black Americans. Chronic sarcoidosis may result in the formation of flat, raised patches (plaques), or plaques that discolor the nose, cheeks, lips and ears (lupus pernio). Lupus peridot is more common in black Americans and Puerto Ricans. People with lupus per colon may also develop nasal granulomas that cause symptoms similar to those of sinusitis.

Different types of sarcoids are diagnosed and classified according to behaviour and response to treatment as they need careful assessment. Various types of sarcoid can be diagnosed in an individual horse.There is no single best treatment for sarcoid (Hollis, 2024). A correct treatment has to be chosen for each sarcoid because inappropriate treatment makes sarcoid more aggressive and worsen the case management (Rahaghi et al., 2020). Sarcoid are locally invasive, fibroblastic skin tumours and represent the most common tumour in equines worldwide (Safa et al., 2019), with an incidence ranging from 12.5 to 67% of all neoplasms (Taylor and Haldorson, 2013). Sarcoids are classified according to their gross appearance and clinical behaviour. There are 6 distinct types of sarcoids based on gross appearance and behaviour including occult, verrucous, nodular, fibroblastic, mixed and malevolent (Valeyre et al., 2017).

Left untreated, most sarcoid types will progress and may become untreatable. Early and aggressive treatment of sarcoid is likely to lead to the best outcome. Location, type and the number of sarcoid masses and locations should direct treatment decisions (Hollis, 2023).

Conclusion:

Sarcoidosis is a disease characterized with an etiopathogenesis of bovine papilloma virus (BPV) which

is not unique to the horses but to other species as well. In humans, papilloma viruses cause cervical cancer in women. Different types of equine sarcoids can be detected and some with local invasive characters mainly in the skin. Granulomatous inflammation is the trend for initiating the disease in horses while in human being it seems more aggressive and can disseminate to the internal organs. On clinical basis, treatment of sarcoid should be recommended correctly otherwise the disease become aggressive.

Conflict of interest:

There was no conflict of interest among the authors.

Acknowledgement:

The authors appreciate the support provided by International Medical School, Management and Science University, Selangor, Malaysia and Ministry of Higher Education and Scientific Research, Iraq.

References:

Baughman RP, Field S, Costabel U, Crystal RG, Culver DA, Drent M, Wolff G. Sarcoidosis in America. Analysis based on health care use. Annals of the American Thoracic Society. 2016; 13(8): 1244-52. https://doi.org/10.1513/AnnalsATS.201511-760OC

Baughman RP, Lower EE, Gibson K. Pulmonary manifestations of sarcoidosis. La Presse Médicale. 2012; 41(6), e289-e302. https://doi.org/10.1016/j.lpm.2012.03.019

Chen ES, Moller DR Sarcoidosis—scientific progress and clinical challenges. Nature Reviews Rheumatology. 2011; 7(8): 457-67.

Chopra A, Avadhani V, Tiwari A, Riemer EC, Sica G, Judson M A. Granulomatous lung disease: clinical aspects. Expert Review of Respiratory Medicine. 2020; 14(10): 1045-63. https://doi.org/10.1080/17476348.2020.1794827

Christen G, Gerber V, Dolf G, Burger D, Koch C. Inheritance of equine sarcoid disease in Franches-Montagnes horses. The Veterinary Journal. 2014 199(1): 68-71. https://doi.org/10.1016/j.tvjl.2013.09.053

Hollis A R. Management of equine sarcoids. The Veterinary Journal. 2023; 291, 105926. https://doi.org/10.1016/j.tvjl.2022.105926.

Hollis A R. What Is the Evidence Behind Sarcoid Treatments? Veterinary Clinics: Equine Practice. 2024; https://doi.org/10.1016/j.cveq.2024.07.006

Kamangar N, Rohani P, Shorr A F. 2014; Peters SP, Talavera F, Rice TD, Mosenifar Z, ed. Sarcoidosis. Medscape Reference. Web-MD.

King Jr TE. 2008. Sarcoidosis: interstitial lung diseases: Merck manual home edition. The Merck Manual Home Edition. Merck Sharp & Dohme Corp.

Martens A, De Moor A, Ducatelle RPCR. PCR detection of bovine papilloma virus DNA in superficial swabs and scrapings from equine sarcoids. The Veterinary Journal. 2001; 161(3): 280-86. https://doi.org/10.1053/tvjl.2000.0524

Nunes H, Uzunhan Y, Freynet O, Humbert M, Brillet PY, Kambouchner M, Valeyre D. Pulmonary hypertension complicating sarcoidosis. La Presse Médicale. 2012; 41(6): e303-e316. https://doi.org/10.1016/j.lpm.2012.04.003

Offer KS, Dixon CE, Sutton DG. Treatment of equine sarcoids: a systematic review. Equine Veterinary Journal. 2024; 56(1): 12-25. https://doi.org/10.1111/evj.13935

Offor SJ, Eshiet UI, Awofisayo S, Mbagwu HO. 2021. CHAPTER NINE Sarcoidosis: Review of the challwnges to manage. Perspectives on International Research on Science in Africa, 144.

Park JE, Kim YS, Kang MJ, Kim CJ, Han CH, Lee SM, Park SC. Prevalence, incidence and mortality of sarcoidosis in Korea. 2018; 2003–2015: A nationwide population-based study. Respiratory Medicine, 144, S28-S34. https://doi.org/10.1016/j.rmed.2018.03.028

Rahaghi FF, Baughman RP, Saketkoo LA, Sweiss NJ, Barney JB, Birring SS, Scholand MB. Delphi consensus recommendations for a treatment algorithm in pulmonary sarcoidosis. European Respiratory Review. 2020: 29(155).

Safa M, Mirab Zadeh Ardekani B, Ghassem Boroujerdi F, Hajizadeh F. Evaluation of the relationship between personality characteristics with emotional intelligence in sarcoidosis patients. Journal of Medical Council of Iran. 2019; 36(2): 90-100.

Taylor S, Haldorson G. A review of equine sarcoid. Equine Veterinary Education. 2013; 25(4): 210-216. https://doi.org/10.1111/j.2042-3292.2012.00411.x

Valeyre D, Jeny F, Nunes H. Current medical therapy for sarcoidosis. In Seminars in respiratory and critical care medicine. 2017; 38(4): 523-31. Thieme Medical Publishers. DOI: 10.1055/s-0037-16040.

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Citation: Al-Sultan II, Shalsh FJ. Sarcoid Disease in Argentine-Cross Polo Ponys: A Case Study. Indian Journal of Veterinary Public Health. 2024; 10(2): 89-92.

DOI: https://doi.org/10.62418/ijvph.10.2.2024.89-92