
Two Cases of Rhinosporidiosis in Equines.

By JOHN QUINLAN, M.R.C.V.S., Dr.Med.Vet., and G. DE KOCK, M.R.C.V.S., Dr.Med.Vet., Research Officers, Onderstepoort.

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TUMOURS set up by rhinosporidium have been described in humans in the Argentine (Malbran, 1892; Seeber, 1900; Wernicke, 1900) (1); in India, O'Kinealy, 1894 (2); Minchin and Fantham, 1900 (3). In Cochin China, Ceylon, and Madras their occurrence has also been reported (1).

In 1906 Sir A. Theiler removed a tumour from the septum nasi of a horse in South Africa and had it forwarded to the Veterinary Institute, Zurich, for examination. It was reported on by Dr. Zschokke, who identified the tumour as a rhinosporidioma (4).

The occurrence of this condition in equines would not appear to be common in South Africa. Only one previous reference to the condition can be traced in the surgical or pathological literature of this laboratory.

The two cases under consideration are the first that have come to our notice after an examination of several thousand equines. In the post-mortem examinations of several thousand equines made by our colleagues and ourselves at this Institute during the past twelve years not a single reference can be found to tumours of this nature affecting the nasal mucosa.

CASE I.

Tumours situated on the regio respiratoria of nasal chambers of a mule (Fig. 1).

Both nasal chambers show the presence of new growths, which are confined to the mucosa. The growths are irregular on the surface, pale pink in colour, and firm in consistency. They are firmly adherent to the mucosa by a sessile base. They vary in size from 2 mm. to 2 cm. in diameter, and from 1 mm. to 1.5 cm. in height. The small tumours are isolated, but the larger ones are more or less confluent, presenting an appearance of granulation tissue with some deep depressions on its surface. On section the tumour is firm, pink in colour, and somewhat vascular, with no trace of suppuration.

In the right nasal chamber the tumours are attached to the septum nasi and the alar fold. There are also a few small new growths on the floor of the nasal cavity. The growths extend upwards for a distance of 10 cm. and end inferiorly at the junction of the skin and mucous membrane.

In the left nasal chamber the tumours are confined to the septum nasi and the floor. They are fewer in number and more isolated. The larger growths, however, are confluent. They extend upwards for a distance of 8 cm. along the nasal septum and terminate inferiorly at the junction of the skin and mucosa.

Microscopical Appearance of Case I. Specimen No. 3453.

The sections of the tumour (see Fig. 2) show it to be composed of a much altered propria mucosa of the nasal mucous membrane (pars respiratoria). The epithelium in this case is of the cylindrical

type and shows practically no alteration. It forms a complete covering of the respective tumours and is continuous with the epithelium of the rest of the septum nasi. The mass of the tumour is associated with the connective tissue stroma of the propria mucosa. It is of the nature of a granuloma, the bulk being made up of newly formed connective tissue and here and there evidences of granulation tissue. This type of tumour seems to be identical with the one described by Zschokke, of Zurich (4). There are no traces of pus foci.

Embedded in this stroma are numerous cysts and sporemorulae of rhinosporidium. They occur either alone or in groups. In the latter case they are usually small in size and situated close to the epithelium. The larger cysts are fewer in number and are situated more deeply. These rhinosporidium cysts are similar to those observed in Case II, described below.

CASE II.

A mule was brought into the out-patients clinique on the 4th April, 1925.

Description.—Light brown gelding, 8 years old, 14.1 h.h.

Anamnesis.—The animal showed a circumscribed rounded swelling on the medial aspect of the leg on the near hind limb for about eighteen months. The lesion had lately increased very much in size and had become very unsightly, although not interfering with movement. For the past month the mule tired easily during work. There was a snoring sound during respiration and marked dyspnoea when trotting. An intermittent nasal discharge had been observed from the near nostril.

Status Presens.—The mule appears perfectly healthy and is in good condition. Examination of the circulatory and respiratory systems gives a negative finding. There is a circumscribed rounded swelling on the medial aspect of the middle third of the region of the leg on the near hind limb. It is about the size and shape of a very large coconut. It is covered with normal-looking skin which, however, is adherent to the swelling. The growth is not firmly adherent to the underlying tibia, its base being slightly movable over the bone. The tumour is sessile, having a base 12 cm. in length by 8 cm. in breadth. It is non-painful and not abnormally warm.

It is firm to the feel like connective tissue, but appears to contain liquid in its centre, i.e. it appears to have undergone degeneration in its centre, but a wide layer of firm connective tissue still encapsules the degenerated portion.

There is well-marked snoring during inspiration and expiration. The left nostril is almost entirely filled up with what appears to be a mass of pale-red granulations. There is a fairly profuse whitish-yellow, slightly foetid, thick liquid discharge from this nostril. On examination of the nostril it is observed that what appears to be granulation tissue filling up the nostril is composed of two new growths adhering to the junction of the skin and mucosa by a common neck (Fig. 3). The neck is about 2.5 cm. in diameter, and is attached to the floor of the nasal chamber 2.5 cm. from the ventral commissure. Each tumour is rounded, about 3 cm. in diameter, fairly firm to the feel, and pale red in colour. The surface is very irregular, almost mulberry-like, showing a number of prominences varying in size from 2 mm. to 5 mm. Its surface is moist and covered irregularly with

whitish-yellow thick liquid discharge. On displacing these growths and introducing the finger into the nasal cavity the nasal mucosa is found to be studded with rough irregular elevations, varying in size up to 1 cm. The prominences are moist, firm, and pale-red in colour. Only one finger can be introduced into the nasal chamber. On section the tumour is firm, vascular, pale-pink in colour and for the most part covered with mucous membrane. The upper limit of the area of roughness cannot be determined with the finger. The circumference of the nasal cavity is involved. The septum nasi, the dorsal and ventral turbinated bones, the alar fold, and the dorsal and ventral meatus are thickly studded with elevations. The lining of the cavity of the diverticulum nasi is not affected. The lower limit of the growth stops abruptly at the junction of the skin and mucous membrane of the nasal cavity, but the base of the two larger tumours is attached at the junction of the skin and mucous membrane about 3 cm. from the nostril.

When the right nostril is closed there is very marked inspiratory and expiratory "snoring" and dyspnoea. When the left nostril is closed "snoring" is not heard.

There is no swelling of the neighbouring lymphatic glands. The mallein test for glanders gave a negative result.

The mule was kept under observation for a period of a month, during which time there was a progressive disimprovement in the nasal lesion.

PATHOLOGY.

The growth on the leg was entirely removed and a small portion of the nasal tumour was also removed for histopathological examination.

(a) *Microscopical Appearance of the Tumour on the Leg. Case II. Specimen No. 4874.*

This tumour, on account of its non-malignant character, was diagnosed as a fibroma. This was confirmed microscopically. Numerous sections from it were examined, but there was no suspicion of cysts or spores. It was thought that it may have been connected with the rhinosporidium tumour situated in the nose.

(b) *Microscopical appearance of the tumour situated in the nasal cavity. Case II. Specimen No. 4874. (See Figures 4 and 5.)*

Sections of the tumour show it to be composed of much altered mucous membrane of the stratified epithelium type. Due to the absence of hair-follicles, it is probably associated with the pars vestibularies of the nasal cavity close to its junction with the skin. The epithelium and its underlying propria have increased tumour-like and have become very irregularly arranged.

The layers of epithelium, especially those above the germinative layer, have become markedly increased in places and in other situations appear atrophied. On its surface here and there is the presence of an exudate, composed of desquamated epithelial cells, together with a fair number of neutrophiles. Here and there numbers of neutrophiles lie in between the epithelial layers. Only here and there do we find the presence of rhinosporidium cysts embedded in the epithelium. As a result of the "mulberry" appearance of the

surface of the tumour, the section shows irregular crypt-like involutions, into which the stratified epithelium extends. As a result of this the section in places shows the presence of islands of stratified epithelium embedded in the propria, i.e. at those situations where the tumour was cut at a tangent.

The propria mucosa has also undergone marked changes. The papillae in places have become irregularly narrow and in others situations have become more hardened as a result of an infiltration of cells. Here and there is an increase of collagen fibres and the presence of round cells, besides foci of neutrophiles, in some of which spore-morulae of the rhinosporidium can be identified. The larger cysts of this parasite seem to be unassociated with the presence of neutrophiles and lie embedded between the collagen fibres, in places in close proximity to the epithelial layers.

The larger number of rhinosporidium occur in the propria and not in the epithelial layers. The majority of the cysts are about 80 microns in diameter, some of the larger ones, which are distinctly rarer, are about twice their size. Cysts measuring about 40 microns also occur. The cysts are more or less circular (see Fig. 5) and their contour sharply defined. The cyst wall, of a hyaline nature, varies considerably in the different cysts. The majority of the stages described by Minchin and Fantham, and later by Zschokke, were recognized in these sections, e.g. smaller cysts, fully developed cysts showing three zones of granular bodies, the spore morulae, etc. It would appear that the condition in Case II is more of the nature of a polypus-like chronic hypertrophic purulent rhinitis.

TREATMENT OF CASE II.

6.4.25. The mule was anaesthetized.

Anaesthesia.—Chloral hydrate, 20 grams intravenously; chloroform, 30 c.c. as inhalation.

Duration of anaesthesia, 45 minutes.

The new growth on the leg was removed by operation. After incising the skin it was enucleated by blunt dissection. The flaps of skin were suitably shortened and sutured. Then a protective dressing of mastisol applied. Healing occurred rapidly. The sutures were removed on the seventh day.

30.4.25. The animal was again anaesthetized.

Anaesthesia.—Chloral hydrate, 20 grams intravenously; chloroform, 15 c.c. as inhalation.

Duration of anaesthesia, 45 minutes.

The left nasal cavity was opened by incising the dorsal wall from the dorsal commissure to the angle of junction of the nasal bone and the nasal process of the premaxilla. The floor of the diverticulum nasi was also cut through. The left nasal cavity was now firmly plugged with gauze. The plug was bound with tape so that it could easily be removed.

It was found that the whole circumference of the nasal cavity for a distance of about 12.5 cm. from the nostril was involved in the new growth. In the inferior 7 to 8 cm. the mucosa was thickly packed with irregular, cauliflower-like prominences, but the frequency and size of the growth became less at the upper extremity of the lesion. Above 12.5 cm. the mucosa appeared to be normal. The tumour was removed with a curved scissors and a looped sharp curette until the

lining of the nasal cavity was comparatively smooth. There was profuse hæmorrhage, but it stopped readily without hæmostats.

When the operation was completed the bleeding surface was swabbed with tincture of iodine and dusted with iodoform.

The wound was closed by suturing the floor of the diverticulum nasi with catgut and the roof of the nasal cavity with silk. It healed rapidly per primam intentionem, the stitches being removed on the eighth day following the operation.

After treatment consisted in daily irrigation of the nasal chamber with a 1 per cent. solution of lysoform. This was followed by painting over the raw surface with tincture of iodine and insufflating with iodoform.

Healing was complete on the fourteenth day following the operation, but the lining of the nasal chamber from which the growth was removed remained pale with numerous cicatrices.

The animal was discharged cured twenty-six days after the second operation. Recurrence of the growth has not been reported thirteen months later.

LITERATURE.

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- (2) O'Kinealy, F.: "Localized Psorosperms of the Mucous Membrane of the Septum Nasi. Proc. Laryng. Soc. London. Vol X, 1903 (cited by Minchin and Fantham).
- (3) Minchin, S. A. and Fantham, H. B.: *Quarterly Journal of Microscopical Science*. N.S., Vol. 49, pp. 521-533, 1906.
- (4) Zschokke, E.: "Schweizer Archiv fur Tierheilkunde." Vol. LV, 12, 1913, p. 611.

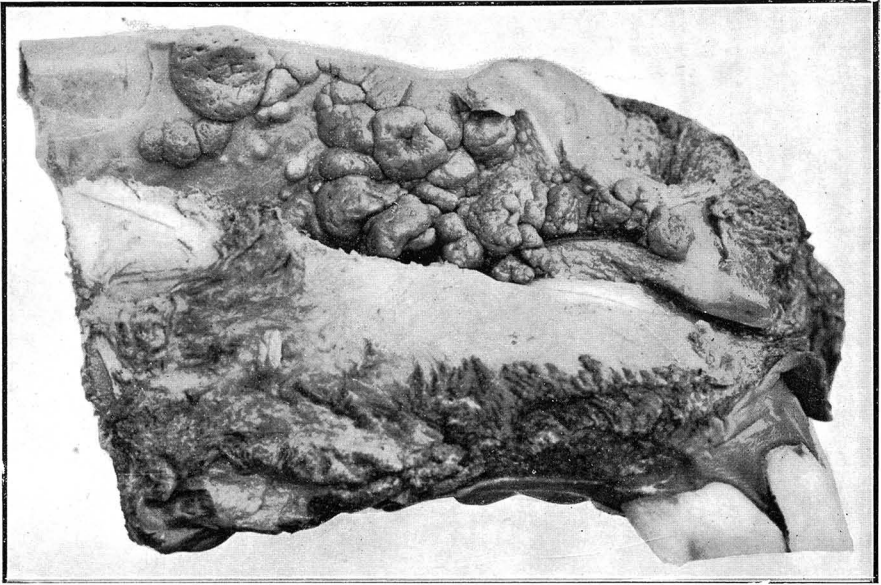


Fig. I.—Photograph of the tumour on the Septum Nasi. Case I.

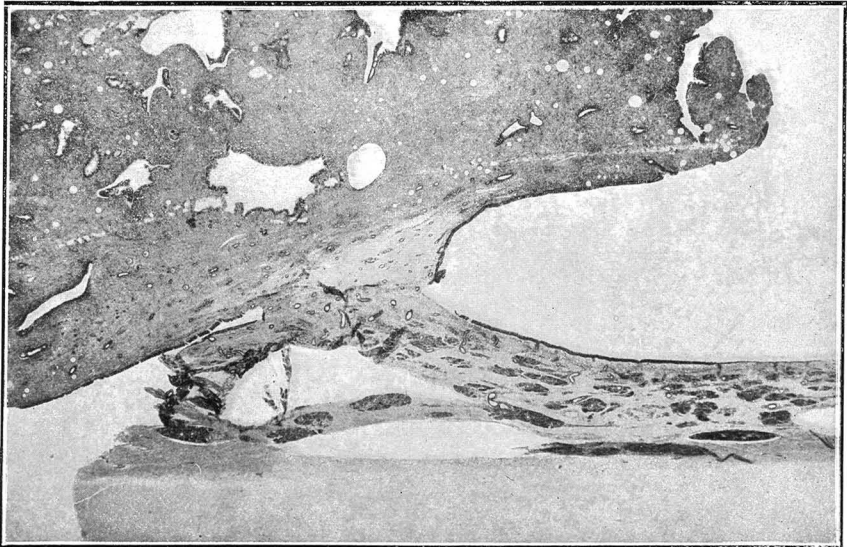


Fig. II.—Photograph of a section of one of the tumours seen in Figure I, showing a portion of nasal septum which is normal and a portion of one of the tumours.

Rhinosporidiosis.]

[*Quinlan and De Kock.*

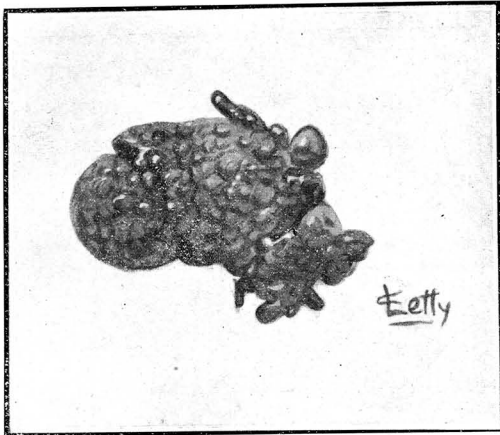


Fig. III.—Case II. Tumour excised, showing the appearance of the surface.



Fig. IV.—Photograph Nasal Septum. A section of the tumour given in Fig. III. Note the irregular arrangement of the stratified epithelium and the presence of the cysts.

Rhinosporidiosis.

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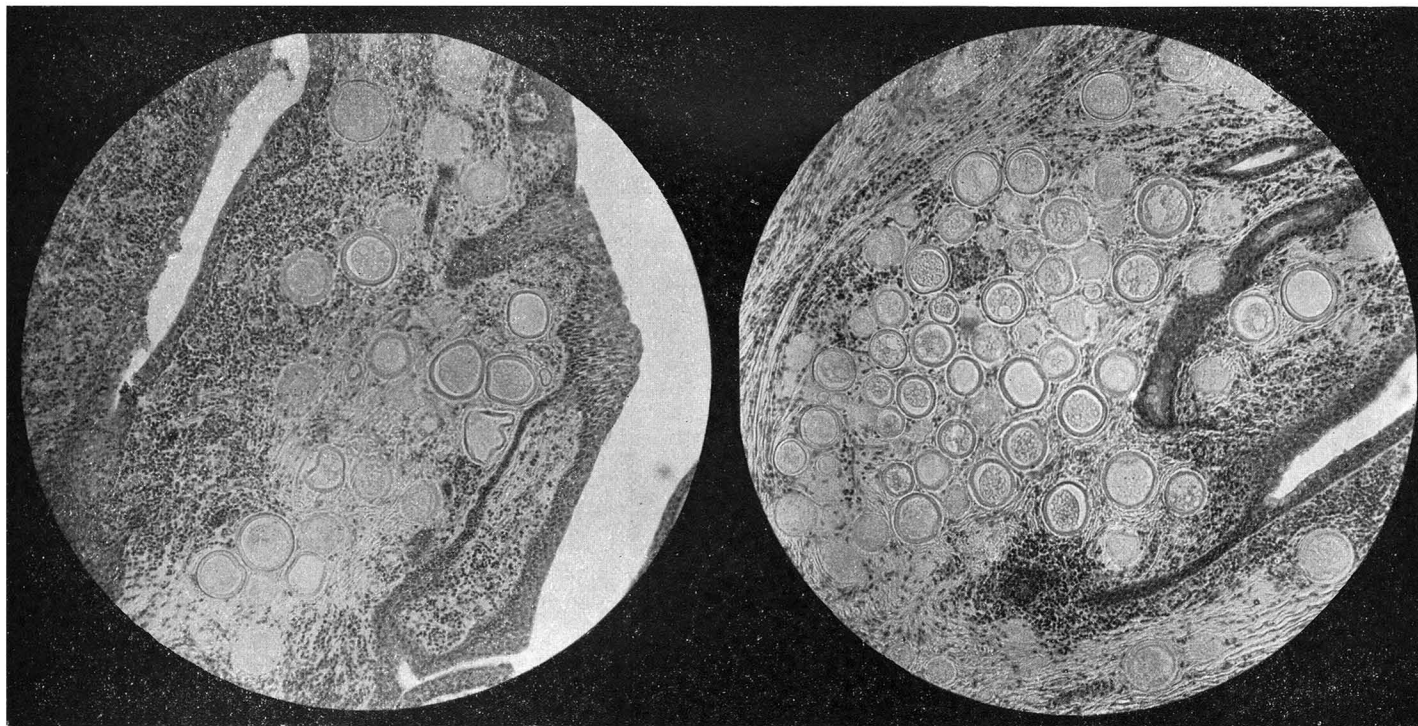


Fig. V.—Case I. Magnification 65 x. Slightly larger magnification of a portion of section in Fig. IV showing the presence of the cysts.

Rhinosporidiosis. [Quinlan and De Kock.]

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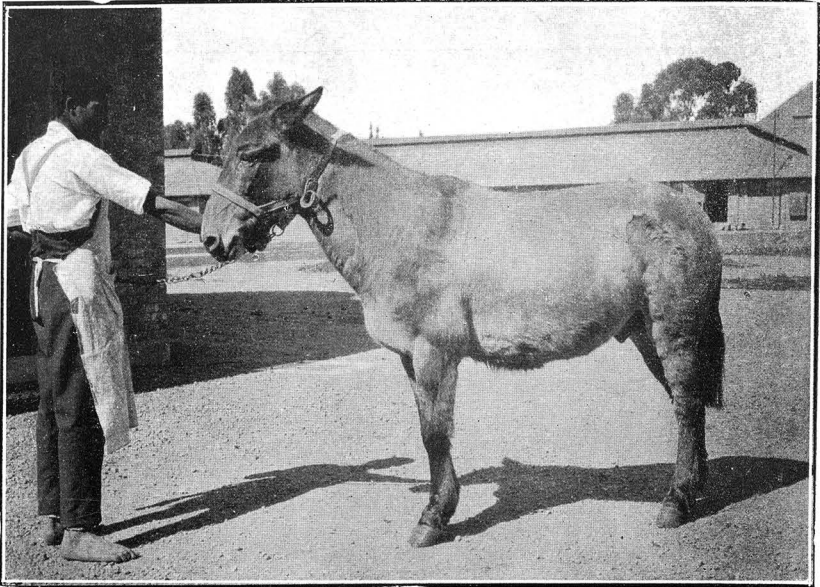


Fig. VI.—Photograph of Mule taken on day of discharge. 26.5.25. Case II.

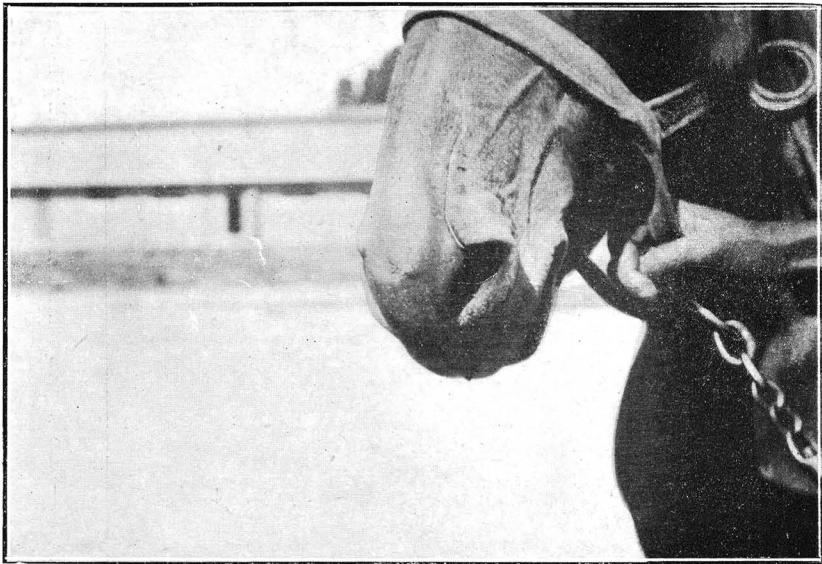


Fig. VII.—Photograph showing healed wound. Case II.

Rhinosporidiosis.]

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