Ultrasonography in Ostriches

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Ultrasonography is a useful aid in diagnosing certain disease conditions in ostriches. These conditions include yolk sac infection/retention in chicks, egg retention and egg yolk peritonitis in breeding hens, abdominal neoplasia in all ages, proventricular impaction and "hardware" disease and peritonitis.

Research is currently being undertaken at Texas A&M University into ultrasonography of the yolk sac in ostriches. This project will help to determine the normal regression of the yolk sac over the first 2 to 3 weeks of life and, as a result, allow easier diagnosis of retention and infection problems.

Ultrasound examination of the proventriculus and gizzard has been only attempted in a limited number of cases by the author. Problems with access and air overlay have been encountered but these have not proven to be sufficient to totally avoid the procedure. Further work is required to develop this technique.

Like other birds, ostriches have an extensive air sac system and consequently, most reliable and diagnostic ultrasonography is limited to the abdomen. In older chicks and adults the abdominal cavity is dominated by the presence of the intestinal tract and this can obscure the view of underlying structures.

The area in which ultrasonography is of greatest use is in diagnosing reproductive failure in adult hens.

Equipment

A linear or vector probe can be used. Ideally the probe should be 3.5mHz for ultrasounding adult birds. This allows adequate penetration as many birds have significant fat deposition, especially in the abdomen. In some cases a 5mHz probe may be adequate but generally insufficient penetration will result.

Site

The lateral abdomen of ostriches is almost designed for trans-abdominal ultrasonography. It offers the best access to the female reproductive tract and the area is totally devoid of feathers. The left abdominal flank is normally used.

Restraint/Facilities

Generally this procedure can be undertaken without the aid of sedation or anaesthesia. The bird may or may not require hooding as the procedure should be ideally performed in a darkened shed or horsefloat to allow better visualisation of the monitor. In these darkened conditions most birds are relatively subdued. If the bird is agitated then hooding and even restraint in a well-designed "ostrich crush" may be necessary to avoid injury to the bird or handlers or expensive damage to the ultrasound equipment.

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Indications

The major indication for ultrasound examination in the mature ostrich hen is the lack of egg production despite normal breeding display and behaviour. If a hen, with a previous egg-laying history, suddenly ceases egg-laying; yet remains "clucky" and readily accepts the male to mate, and this situation has occurred for more than 6-8 weeks, then ultrasonography is indicated.

The presence of ascites is also a clear indication for ultrasonography. Unfortunately, especially in obese birds, it can be difficult to readily detect the presence of fluid in the abdomen (unless excessive) by palpation and ballottement. It should also be noted that it is not abnormal to detect a significant swelling just below the vent in many breeding hens. This is due to the dramatic increase in the size of the ovary and oviduct during the breeding season. This increase in size results in an increase in abdominal pressure and creates a swelling in this site. This swelling is usually composed of intestine. Excessive fluid in this area may be detected by a manual examination of the cloaca via the vent with a gloved, lubricated hand.

The nature and volume of the fluid can be estimated by ultrasonography. Once it's presence is confirmed this fluid can be aspirated and analysed by abdominal paracentesis. The technique for this procedure involves the use of an 18 gauge 3-4" catheter or spinal needle introduced using aseptic techniques high on the left lateral abdominal wall in the non-feathered region. Hooding and local anaesthesia is adequate to perform this technique.

Interpretation

Interpretation of Ultrasound examinations is dependent on experience, amount of fat, fluid or gas present and quality of equipment.

Retained eggs, excess fluid, enlarged oviduct, ovarian follicles, abdominal neoplasms, and foreign bodies can all be visualised.

Care must be taken when interpreting ovarian activity and using this to predict onset of lay. Normally the maturing follicle will develop to about 75-80mm in diameter before ovulating. However, not all follicles attaining this size will ovulate. These follicles will simply begin atresia and slowly regress in size over days or weeks.

A typical egg yolk peritonitis case will have excess abdominal fluid present. The oviduct may or may not be readily visualised. The ovary is almost invariably active with several large ovarian follicles being present.

The normal hen will have little but intestine readily visible in the abdomen. If the ovary is inactive it is difficult to visualise especially if a linear probe is used. The oviduct is also difficult to fully visualise because of overlying intestinal tract.

Summary

Ultrasonography in ostriches is a very useful tool in aiding diagnosis of certain conditions. Limitations exist which mean that most ultrasound examinations are restricted to the abdominal cavity.

Future ultrasound applications may include examination of skeletomuscular disorders using specialised probes and examination of other organ systems. This work will require further investigation and research to allow it's introduction as a further diagnostic aid to the veterinarian.