TRICHOBEZOAR

BY

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Bezoars are rare abnormalities, only about 400 having been described in the literature up to 1950 (Tondreau and Kirklin). Their history presents a strange and intriguing story. From earliest times the bezoars of goats and other animals were used both in the prevention and the treatment of disease. They were worn in amulets as a protection against evil and were taken internally to treat such widely diverse conditions as sexual impotence and leprosy. The word bezoar is derived from the Arabian *badzehr* or the Persian *padzahr*, both of which mean antidote.

At present bezoars are of medical interest in so far as they affect the unfortunate individual who harbours them. The case reported below is the first diagnosed in this hospital in 30 years.

Case Report

M.M., a white girl of 9 years and 10 months, was referred to hospital by the school clinic for investigation of an abdominal tumour.

For some months before admission she had complained of attacks of colicky abdominal pain. She had bouts of nausea with the pain but never vomited. She felt the desire to go to stool but, in fact, never passed a stool in an attack; the pain moved slowly across the abdomen from right to left. Her mother had noticed that during an attack her abdomen became enlarged and she could feel a mass in it. She had always been thin, but her appetite was invariably good.

The patient is the third in a family of four children, and apart from one holiday to the sea has never been away from home. The family have always lived in Johannesburg and have never been to any sheep-farming area. She had a tonsillectomy two years ago and no abdominal mass was felt when she was examined for fitness for the operation.

The child had had no other previous illnesses.

She was an alert, healthy-looking child, with no evidence of anaemia and no abnormalities were detected on inspection. The abdominal contour was not abnormal and no fullness was noticed in the epigastrium. A few scattered lymph nodes were palpated.

On abdominal palpation a large, painless mass was felt in the upper abdomen. This tumour was hard—of almost cartilaginous consistency. It was mobile in a

transverse direction but could not be moved vertically. It moved well, at the beginning of respiration. The mass was sausage-shaped and lay at an angle of about 45° to the long axis of the body. Its upper pole disappeared under the ribs just to the left of the midline and the lower-most portion of the tumour reached nearly to the umbilicus. It was possible to get between the upper edge of the tumour and the ribs in the subcostal angle and in this area the liver edge could be palpated, apparently separate from the mass. In the right flank one could get behind the mass. The lower edge of the tumour was irregular. Crepitation was felt over the anterior surface and it was resonant on percussion. The spleen was just palpable. Rectal examination revealed no abnormality. Bowel sounds were heard normally.

Examination of the other systems revealed no abnormality.

Radiographs were taken and Dr. M. J. Meyer reported that the stomach was filled with a mass occupying its

FIG. 1.—Plain film of the abdomen. The stomach is outlined by the mass.

FIG. 2.—Five minutes after the ingestion of barium. The bezoar is outlined by barium. A small amount has already passed on.

FIG. 3.—Film at six hours. Barium still enmeshed in the trichobezoar. The colon is well filled.

whole volume. A small amount of barium outlined the mass, and passed onwards without delay. The appearances were those of a bezoar, probably due to hair. The lungs were clear.

The parents said that from infancy the child had picked the fluff off her blankets and swallowed it. Of recent years she had been sucking and biting the long strands of her hair and had swallowed them. She was a nail-biter, but had had no other psychological abnormality. She was a year ahead of her age group at school and although she managed to keep up with the school work she came in the lower half of the class. Her elder sisters were both in the top three in their classes. The patient was a happy child and popular with the neighbours and with other children—both her own family and school friends. She was very fond of her younger brother (two years her junior) and had never shown any overt jealousy.

She has now been referred to a psychiatrist for assessment and handling.

The child was operated upon by Mr. R. L. Almond (Senior Surgeon, Transvaal Memorial Hospital for Children). A transverse upper abdominal incision dividing both recti was made. The stomach was found to be three times the normal size and the mass within it felt pultaceous. This was easily delivered through a 3-in. anterior incision in the longitudinal axis of the stomach. The mucosa was found to be greatly hypertrophied with well formed rugae, and lined with a fair

FIG. 4.—Trichobezoar removed at operation.

amount of shiny material. The hair ball itself was very large, the size and shape of the stomach. The dark hairy constituents were held together by shiny material.

The post-operative course was smooth. Gastric suction was maintained for 60 hours during which time the patient was maintained in fluid balance by the administration of intravenous fluids, which were discontinued after about 72 hours. The patient had already been allowed small sips of water which were retained. Thereafter convalescence was rapid and the patient was allowed out of bed after 96 hours and discharged from hospital on the tenth post-operative day.

Stomach fasting-juice on the ninth post-operative day showed normal acidity with a normal amount of free hydrochloric acid.

Discussion

Bezoars are classified into three categories according to their composition: (1) trichobezoars or hair balls, (2) phytobezoars which originate from vegetable matter, and (3) concretions.

Trichobezoars, which are the commonest type, are seen in the younger age groups, the youngest case quoted by De Bakey and Ochsner (1938) being 1 year of age, and are found predominantly in females. These authors found that almost two-thirds of reported trichobezoars were in the second and third decades and a further 17.6% in the first decade. Other cases reported recently by Wilkinson and Wilkinson (1950), Eberhard and Pack (1950), Hurwitz and McAlenney (1951) and Osmond and Price (1951) were all in females in the first two decades. The aetiology of trichobezoars is of two-fold interest: first the purely mechanical aspect of the retention of hair in the stomach and secondly the motivating force behind the ingestion of hair.

No one has adequately explained the mechanics of the formation of hairballs, and experiments done by Meilchen (1911) and Mitchell, Bradshaw and Carlson (1924) seem to prove that the peristaltic movements of the stomach cannot move single hairs but can move intertwined masses of hair; in addition to this, the type of diet, especially its fat content, may bear some relationship to the formation of bezoars. The reason for young girls eating their hair has also not been satisfactorily explained. It is often stated that these cases occur mainly in mentally retarded persons. However, the literature shows that most cases quoted are of a normal mentality although there is frequently some psychological upset or personality change. Bakwin and Bakwin (1953) relate the eating of hair to pica. Golden, in a personal communication to De Bakey and Ochsner, states this is a 'habitual body manipulation' and is related to nail-biting and tongue-sucking and is not a manifestation of abnormal

appetite. Both pica and habitual body manipulation are evidences of maladjustment or personality change. The two cases reported by Hurwitz and McAlenney (1951) were both nail-biters, as was one of Eberhart and Pack's (1950) cases and one of the cases of Wilkinson and Wilkinson (1950), and the case reported here. The patient of Nussey and Leask (1949) was reported as being 'rather furtive and reserved to a pathological degree'. Behaviour disorders are no more frequent in girls than in boys and it is difficult to explain the increased frequency of trichobezoars in the female. The explanation of earlier writers is that it is because girl's hair is longer and more easily sucked and bitten.

Trichobezoars are dark in colour, despite the fact that the patient may have fair hair, and consist of firmly intertwined hairs of various lengths. They vary in size with the length of time that trichophagia has been practised. The bezoar may have other types of fibre intermeshed with hair due to the habit that these children have of pulling fibres off blankets, teddy-bears and toys and swallowing them. The trichobezoar usually has a putrid odour due to the breakdown of food material which becomes enmeshed in the tangle of hair. On removal from the stomach they are covered with glairy mucus.

Phytobezoars are composed of vegetable matter, most commonly from persimmons. Thus 73% of the 126 cases of phytobezoar collected by De Bakey and Ochsner were persimmon phytobezoars and Chont (1942) in recording nine cases of persimmon phytobezoar states that probably 90% of phytobezoars derive from them. Tondreau and Kirklin (1950), quoting 16 cases of phytobezoar, state that 13 of them were persimmon bezoars. These cases are confined to Japan and some areas of the U.S.A. and are due to the precipitation by weak solutions of hydrochloric acid of certain constituent matter in persimmons. This becomes a sticky, insoluble mass and binds the seeds and fibres of the fruit into a bezoar. Experiments performed by Chont (1942) and by Izumi, Isida and Iwamoto (1933) tend to prove this hypothesis. Other phytobezoars consist of fibres of vegetable origin bound together in a mass usually too large to pass through the pylorus. Phytobezoars are found mainly in males in the fourth, fifth, and sixth decades and are rare in childhood.

Concretions are usually derived from the ingestion of furniture polish which is highly esteemed for its alcoholic content by certain workers in the furniture industry. Ingestion of water then precipitates the shellac from the polish and this forms a foreign body in the stomach. De Bakey and Ochsner (1939)

record other concretions which have been reported following a barium meal, the ingestion of salol and other medicaments.

Clinical Findings.—The main symptoms are gastro-intestinal, principally pain, which is seen in 90% of cases and is usually of a colicky nature. Anorexia, nausea, vomiting and diarrhoea are seen in a large percentage of cases. Constipation and haematemesis have been reported but are rare. Occasionally the presenting symptom is a mass which has been discovered either by the patient or by her doctor on routine examination. General malaise, loss of weight, headache and weakness are occasionally seen, but the patient's general condition usually remains astonishingly good despite the large mass which is being carried in the stomach.

Persimmon bezoars have a somewhat different history as there is often a story of an acute gastric upset with vomiting and pain following a large feed of persimmons. Following this acute episode the symptoms are similar to those described in the preceding paragraph.

The size varies with the type of bezoar and is usually smaller in the phytobezoar, while the trichobezoar often fills the whole stomach and becomes a cast of that organ. Thus the tumours are usually described as being J-shaped, sausage-shaped, kidney-shaped or cucumber-shaped. While larger bezoars are usually mobile laterally, and move with respiration, smaller ones, especially phytobezoars, are easily movable in all directions within the stomach. Crepitation may be felt over the bezoar in the case of trichobezoars and is an important diagnostic sign when elicited, as in our case. There is frequently a foul, putrid halitosis in the case of trichobezoars.

Laboratory Findings.—There is usually a mild anaemia in these cases and sometimes a mild leucocytosis.

Gastric analysis reveals free HCl in all cases of phytobezoar (Chont) but the gastric acidity may be diminished in trichobezoar. Gastric lavage and examination of the stools may reveal strands of hair.

Radiological Findings.—The diagnosis of bezoar is usually made radiologically.

Trichobezoar and phytobezoar have different radiological appearances. Trichobezoars may show on a plain film of the abdomen as outlining the stomach. The colon may be pushed downwards by the mass. On the administration of barium there is an initial hold-up of the contrast medium which forms a 'cap' to the mass. The barium then flows over the surface of the hair ball and outlines it,

at the same time outlining the stomach and proving that there is no abnormality of the gastric outline. As the barium soaks into the matted mass of hair a reticular appearance to the tumour becomes apparent, which persists for some hours after the barium has passed into the small intestine. In our case the barium appeared rapidly in the small bowel, within a space of minutes, due either to a small extension of the bezoar through the pylorus or to a patulous pylorus as a result of several years of abnormal gastric function. The mass remained outlined with barium for several hours. Phytobezoars are usually smaller and do not retain barium as they are solid. They show as filling defects within the stomach and are best seen if a small amount of barium is used. When multiple they show up as multiple filling defects within the stomach, each outlined by barium.

Complications.—Gastric ulceration and intestinal obstruction are the main complications (Tondreau and Kirklin) and occur with equal frequency. Obstruction is more frequently seen in phytobezoars which are smaller and thus more easily able to pass the pylorus. Pieces of trichobezoar may break off and cause obstruction, but this is less common.

Gastric ulcers are seen in some cases and tend to heal after removal of the mass. Very few perforations have been reported, but those that perforate do not do well. In fact the only survival after perforation of an ulcer in the case of trichobezoar is reported by Osmond and Price (1951). Haematemesis has been reported and anaemia is also seen occasionally.

Treatment.—Surgical removal of the bezoar is the treatment which should be carried out in all cases. The operative mortality is given by De Bakey and Ochsner as 4·8% in trichobezoar, 7·4% in persimmon phytobezoars and 4·7% in other phytobezoars. In the nine cases reported by Chont eight were subjected to operation and three died. This is an abnormally high mortality rate as in other series it is much lower.

Prognosis.—On rare occasions recurrence of the bezoar has been reported. If surgical intervention is not succeeded by adequate psychological follow-up, trichophagia may once more be practised. Apart from this possibility, the prognosis is good.

Summary

A case of trichobezoar in a 9-year-old white girl is reported.

A classification of bezoars is given and the clinical

and radiological features and laboratory findings are discussed.

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