Urethral Obstruction Caused by a Bullet Lodged in the Urethra of a Cat: A Case Report and Review of the Literature

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ABSTRACT

A four years old domestic short haired castrated male cat, living indoors and outdoors, was referred to the Hebrew University Veterinary Teaching Hospital with vomiting, anorexia, lethargy, a single episode of stranguria and a presumptive diagnosis of urinary obstruction due to feline idiopathic cystitis. The cat was suspected to have uroabdomen, septic peritonitis and acute kidney injury, and was primarily treated medically. Survey radiographs and positive contrast radiographs revealed a pellet, suspected as an air gun lead bullet, lodged and partially obstructing the proximal urethra. There was no physical evidence of a gunshot wounds and no history of trauma. The bullet was excised using cystotomy, and maneuvering of the bullet from the urethra to the urinary bladder. During surgery there was no evident entry wound to the bladder or other trauma in the abdomen. It is assumed that the septic peritonitis was either the result of uroabdomen with cystitis due to a contaminated bullet, or the result of a direct insult from the contaminated bullet in the abdomen. This cat's relatively slow response to treatment was probably due to long duration of illness with easily missed clinical signs leading to a kidney injury, along with septic peritonitis, and maybe secondary pancreatitis as complications. It may be assumed that the bullet initially lodged in the urinary bladder, and there on relocated to the proximal urethra. Reports of a bullet causing urethral obstructions are rare, and this is the first case documented in Israel to the best of our knowledge, and the first reported with a complication of septic peritonitis. All previous reports showed the bullet to be an unexpected finding, with no evidence of gunshot in the history, and most times no signs of trauma in the physical examination. Survey and contrast radiograph served as an important layer of diagnosis when vague history and clinical signs are present, especially with urinary obstructions.

Key words: Feline; Gunshot; Azotemia; Acute Kidney Injury; Septic peritonitis; Uroabdomen; Cystotomy.

INTRODUCTION

Gunshot wounds prevalence in veterinary medicine vary according to the location of the practice, and are usually more prevalent in rural areas (1). Some studies imply that young male dogs and cats are overrepresented with gunshot injury (2, 3), and that animals are shot mainly at night time (2). In previously documented cases, air powered gunshot wounds are usually the result of shooting by adolescents either as a malicious act, criminal or accidental activity (1). Knowledge of the weapon and exact history may help the veterinarian to determine the appropriate surgical management of the injury. Weapons used are handguns, rifles, shotgun, and air-powered guns (1). The mechanical and physical damage of a gunshot projectile may be induced by tissue laceration and crushing, shock waves and cavitations (4). The severity of tissue injury depends on the projectile characteristics, the

kinetic energy absorbed and the characteristics of the tissue struck by the bullet (1). Air powered weapons rely on compressed air to impart velocity on the projectile. The caliber commonly used includes 0.177, 0.20, 0.22 and 0.25 caliber of lead pellets, typically shaped like an hour glass, a cone or a silo. Although air gun pellets have low mass and low velocity, they are capable of seriously injuring or killing large animals, especially at close range (1). Low velocity projectiles produce mainly crushing and laceration, affecting only the tissues in direct contact with the projectile (4). The specific gravity and relative cohesive properties of tissues affects the severity of tissue injury. Skin and lung for instance, have greater elastic properties and are better able to sustain projectile trauma (1).

Diagnosis of a gunshot wound might be challenging if no precise history is available. When there is no major impact during the time of the trauma, the related clinical signs may be vague or non-existent, and there for the trauma may be overlooked. In these cases, when the clinical signs appear only weeks to months after the trauma (due to migration of the bullets, progressive infections, and other related complications) as commonly ensues, it is hard to correlate them with any relevant history. During physical examination small gunshot wounds may be easily overlooked, especially in long-haired animals. Wounds presenting on opposing sides or appearing visually aligned are suspected as gunshot wounds, especially if there is a difference in wound size, as entry wounds are usually smaller than exit wounds (1). Imaging may not reveal a pellet unless there's a fragmentation of the pellet or if there was no exit of the pellet as in low velocity projectiles. Imaging may reveal tissue damage secondary to the gunshots such as broken or shattered bones (1, 5). Ultrasound may be a useful tool in detecting foreign bodies, especially in cases of luminal body structures (6-10). Other diagnostics tools such as CT, myelography, endoscopy are advisable depending on the wound location and clinical findings.

Gunshot wounds are classified as contaminated wounds (4, 5). Treatment of the entry and exit wounds is similar to treating any contaminated wound, unless there is a significant vascular trauma (1, 5). Penetration of the abdomen usually requires also exploratory celiotomy, as in other penetrating or perforating abdominal wounds (1, 3, 4). The surgeon may encounter severe mechanical tissue injury, peritonitis and vascular trauma during exploration (1). It is suggested that abdominal wounds might have poorer prognosis then thoracic or limb injury (3), although eventually prognosis is determined considering the vitality of damaged tissues and the nature and the expanse of the damage. Removal of projectiles should be considered if they are easily accessible and their removal possesses no further damage to other tissues, or if there is a possibility of poisoning (e.g., lead bullet) (1).

Reported foreign bodies in the urinary tract are rare in veterinary medicine, and include grass awns (6, 11), needles (12), toothpicks (13), retained urinary catheters (9, 14, 15), hairs (10) and bullets (7, 8, 16-20). Bullets may be lodged anywhere along the urinary tract, including the kidney (21), bladder (6, 13, 20, 22 ,23), and urethra (7, 8, 16, 17, 19). Objects may reach the urinary tract traumatically, by migration from other organs (7, 8, 23-25), iatrogenically during surgery or manipulation of the urinary tract (10, 12) or through retrograde migration from the urethral opening (6, 11).

CASE HISTORY

A four-year-old domestic short haired castrated male cat was referred to the Hebrew University Veterinary Teaching Hospital (HUVTH) with a complaint of poor recovery after sedation and catheterization of the urethra due to a urethral obstruction. The cat lived both indoors and outdoors and was usually healthy except for a leg trauma at 3 months of age. There was no other evidence of previous trauma since adoption. Two weeks before admission the owner noticed the cat was wailing often. During the 4 days prior to admission at the referral veterinarian clinic, the owner noticed an abdominal pain, sporadic vomiting, anorexia, lethargy and a single episode of stranguria. The referring veterinarian suspected a urinary obstruction due to Feline Idiopathic Cystitis (FIC), sedated the cat, catheterized the urethra with little difficulty, and observed blood and blood clots streaming out of the catheter, along with some urine. The urethral catheter was later removed by the referring veterinarian, and post sedation medical management was applied. Later, the cat was referred to the HUVTH due to a poor recovery from the sedation.

Physical examination abnormal findings on presentation included: recumbency, delirium, bradycardia (heart rate of 120 b/min), hypothermia (temperature of 37.4°C) and abdominal pain on palpation. Mucous membranes, hydration status and blood pressure were all normal. The urinary bladder was not palpable. Complete blood count (CBC) was

Table 1: Hematological findings of a cat with a bullet obstructing the urethra, at presentation to the HUVTH.

Parameter	arrival	Reference interval
White blood cells ($X10^3/\mu L$)	16.1	5.5-19.5
Red blood cells ($X10^6/\mu L$)	7.97	5.0-10.0
Hemoglobin (g/dL)	10.6	8.0-15.0
Hematocrit (%)	32.2	24.0-45.0
Mean corpuscular volume (fL)	40	39-55
MCHC (g/dL)	32.8	30.0-36.0
Red blood cell distribution width (%)	**22.6**	11.9-14.5
Platelets ($X10^3/\mu L$)	337	143-400
Mean platelet volume (fL)	**12.5**	7-11
Granolocytes ($X10^3/\mu L$)	13.2	2.5-14.0
Lymphocytes ($X10^3/\mu L$)	1.97	1.5-7.00
Monocytes ($X10^3/\mu l$)	1.00	

MCHC, mean corpuscular hemoglobin concentration.
Values in bold are outside the RI.

Table 2: Selected serum biochemistry measures of a cat with a bullet obstructing the urethra, at presentation and at the following 60 hours of hospitalization.

Parameter	At arrival	12 hours[1]	18 hours	36 hours	60 hours	Reference interval
Glucose (mg/dL)	85	15/70[2]	127	120	158	70-125
Creatinine (mg/dL)	**16.6**	**11.6**	–	**6.2**	**2.38**	0.3-1.3
Phosphorus (mg/dL)	-	**9.6**	–	**8.9**	4.6	4.0-7.3
Ionized Calcium (mmol/L)	**0.69**	0.98	0.89	–	–	0.8-1.4
Chloride (mmol/L)	**110**	**107**	113	**110**	**107**	111-125
Potassium (mmol/L)	**8.45**	**7.8**	4.04	**3.54**	**3.46**	3.8-5.3
Sodium (mmol/L)	**139.1**	**133**	151.1	146	**141**	145-159

1, "Hours" referring to hours after arrival to the HUVTH.
2, Glucose levels were 15 mg/dL for a time, but after treatment raised up to 70 mg/dL.
Values in bold are outside the RI.

within normal limits (Table 1). Selected serum biochemistry parameters revealed severe azotemia (creatinine 16.6 mg/dL, Reference Interval [RI] 0.3-1.3 mg/dL), severe hyperkalemia (8.45 mmol/L, RI 3.8-5.3 mmol/L), hypocalcemia (ionized calcium 0.69 mmol/L, RI 0.8-1.4 mmol/L), and mild hyponatremia (139.1 mmol/L, RI 140-154 mmol/L). The sodium to potassium ratio was markedly low (16.46 mmol/L). Blood glucose levels was within reference range (Table 2). A focused initial Ultrasound examination of the abdomen revealed mild abdominal effusion. The abdominal fluids were sampled, and revealed high values of creatinine (>10 mg/dL, the exact value of which could not be determined), total solids (TS) of 1 g/dL, and traces of blood (packed cell volume (PCV) of 1%). Glucose level in the abdominal fluids was similar to blood glucose levels (87 mg/dL). Cytology of the abdominal fluids revealed a large quantity of neutrophils, some with evidence of bacteria in the cytoplasm. Urine, obtained by cystocenthesis, showed specific gravity (USG) of 1.012, pH of 6, hematuria (1-2 red blood cells/HPF), proteinuria (+2), glucosuria (+1) and bacteriuria (i.e., cocci were observed in the urine sediment). Urine sample was sent for culture and sensitivity tests. Electro-Cardio-Graph (ECG) examination showed Ventricular Tachycardia which later on resolved into Sinus Tachycardia. An initial assessment of uroabdomen,

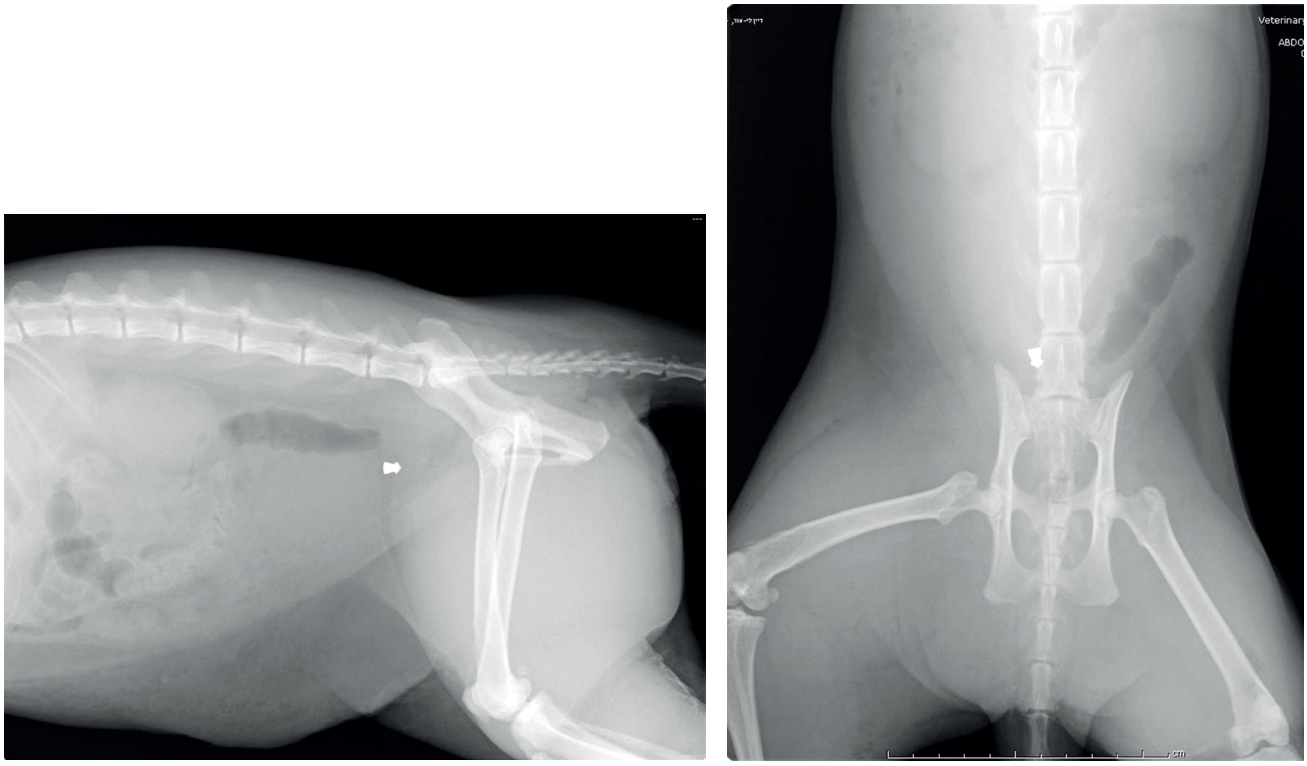

Figure 1: Right lateral and ventro-dorsal radiographic views of the abdomen of a cat with urethral obstruction showing a lead bullet in the caudal abdominal cavity. A moderate diffused loss of details in the abdominal cavity can be noticed.

septic peritonitis, cystitis and potentially acute kidney injury was made, and a preliminary plan for treatment and strategy for further diagnosis was set.

The cat was hospitalized and initially treated with one bolus of 2.5 ml dextrose 25% (Cure medical, Emek-Hefer, Israel), IV fluids of saline 0.9% (Sodium Chloride 0.9%, Teva-medical, Ashdod, Israel, 4 ml/kg/hr), with 5% dextrose supplementation, Insulin regular (*Humulin R*®, Lilly USA, Indianapolis, USA, 10 units/Kg IM, once), calcium (*calcium-gluconate*®, B. Braun, Melsungen, Germany, 1 mg/Kg Slow Intra-venous (SIV)). A Urinary catheter (5-Fr, polyvinyl chloride feeding tube, Willy Rusch, Kemen, Germany) was inserted with no difficulties, though no urine spilling out of the catheter was observed and no urine was drawn after flushing the catheter with lactated ringer's solution (LRS) (Hartmann's solution, Teva-medical, Ashdod, Israel) into the catheter. A peritoneal lavage was done using 10 ml/kg of warm saline.

Venous blood gas, obtained 2 hours post initiation of IV fluid therapy, showed a poorly compensated metabolic acidosis and hypocapnia (pH 7.12, RI 7.34-7.43, HCO3-10.1 mmol/L, RI 20-24, pCO_2 31.1 mmHg, RI 35-45).

No remarkable change in the venous blood gas, electrolytes and creatinine values were noticed 4 hours after initiation of therapy. Additional treatments included: Bicarbonate (Sodium Bicarbonate, B. Braun, Melsungen, Germany, 0.3*deficit*Kg, SIV over 4 hours, once), amoxicillin-clavulonate (Augmentin, SmithKline, Brentford, UK, 15 mg/kg SIV q12h), enrofloxacin (Baytril, Bayer AG, Leverkusen, Germany, 5 mg/Kg SIV q24h), butorphanol (Butorphanol tartrate, Fort Dodge animal health, Iowa, USA tartrate, 0.4 mg/kg SC q4h) and continuous intensive monitoring.

Twelve hours after initiation of therapy there was a mild decrease in creatinine (11.6 mg/dL) and potassium (7.8 mmol/L), and a mild increase in ionized calcium, into the reference range (0.98 mmol/L) (Table 2). Hyperphosphatemia was observed (9.6 mg/dL, RI 4-7.3). No note-worthy changes in other electrolyte (Table 2), venous blood gas, PCV and TS values were observed. Blood glucose levels had decreased to 15 mg/dL at one point, and after two bolus of 2.5 ml dextrose 25%, reached 70 mg/dL (Table 2). Insulin therapy was given once more (10 units/Kg IV, once).

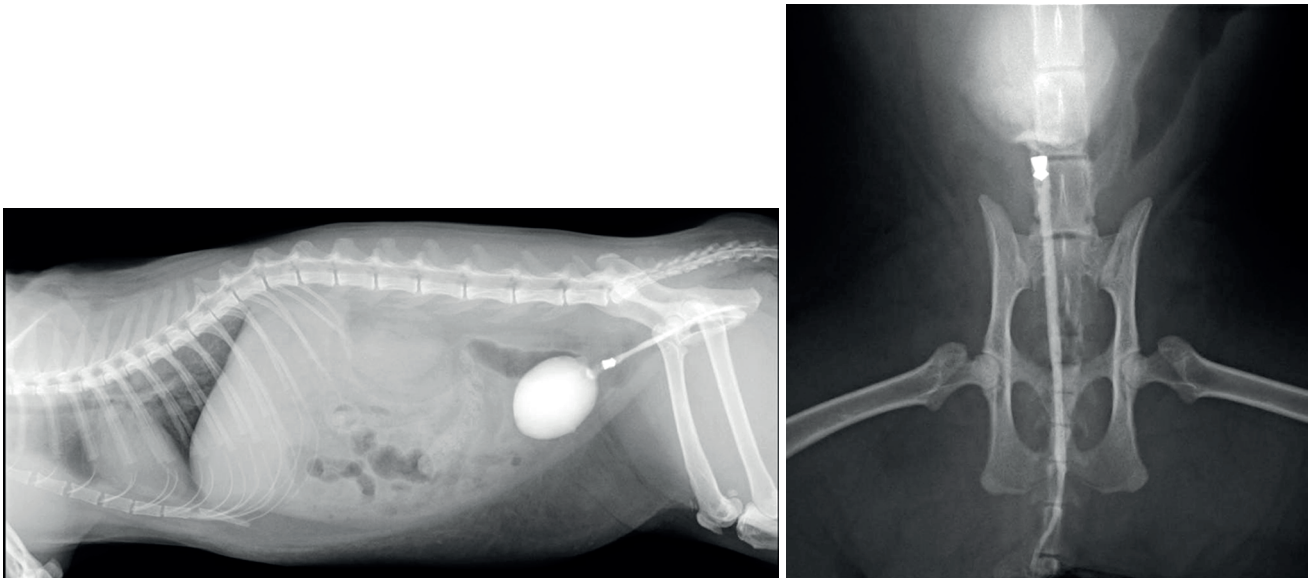

Figure 2: Right lateral and ventro-dorsal retrograde positive contrast cystourethrography showing the bullet to be lodged in the proximal urethra creating a partial obstruction of the urethra.

Eighteen hours after initiation of therapy, electrolytes were all within the reference range (Table 2), venous blood gas showed a decrease in the metabolic acidosis (pH 7.26, RI 7.34-7.43, HCO3- 14.1 mmol/L, RI 20-24, pCO_2 32.1 mmHg, RI 35-45), and normal blood glucose levels (Table 2).

Once stabilized, two views abdominal radiographs were performed (Figure 1), which revealed diffusely mild increased opacification of the abdominal cavity with a moderate degree loss of details. A foreign body, presumably a 5 mm air gun pellet, was seen in both lateral and ventro-dorsal radiographs, at the area of the caudal abdomen/cranial pelvis cavity. Retrograde positive contrast cystourethrography (Figure 2) showed the bullet to be lodged in the proximal penile urethra, with the urinary catheter opening peeking and pouring with little difficulty into the urinary bladder lumen. No evidence of bullet wound was found on the cat's skin. A thorough abdominal ultrasound revealed mild to moderate abdominal effusion, bilateral mild renal pelvis dilatation, and mild wall thickening of the urinary bladder.

During his first 24 hours of hospitalization, the cat showed very mild but progressive clinical improvement. He was quiet, alert and responsive, urine production was similar to fluid administration rate, vital signs normalized, though partial anorexia was still apparent.

Approximately 24 hours after admission the cat was operated. The cat was premedicated with butorphanol (0.4 mg/Kg SC) and acepromazine (Acepromazine maleate, Fort Dodge animal health, Iowa, USA, 0.1 mg/Kg SC). Induction was performed with propofol (Propofol, Taro Pharmaceutical Industries Ltd., Yakum, Israel, 2 mg/Kg IV) and diazepam (Diazepam, 10mg/ml, Teva industries, Netanya, Israel, 0.5 mg/Kg IV) and maintained with gas inhalant anesthesia using 2% isoflurane (2% Isoflurane, USP, Terrell, Minrad Inc., USA). Positive pressure ventilation was initiated shortly after induction for one hour in order to stabilize the breathing pattern. A ventral midline abdominal approach was performed from the xyphoid to the pelvis and a cystotomy revealed a 5 millimeters lead bullet lodged in the proximal prostatic urethra, with evidence of discoloration, mild edema and expansion in the urethra around it. Blood clots in the urinary bladder, and evidence of peritonitis around the urinary bladder were noted. Exploration of the abdomen revealed no other significant findings. The urinary bladder seemed intact and no tears or leaks were suspected in the urinary tract. The bullet was manipulated gently through the compromised urethra into the bladder lumen and excised. The bladder and proximal urethra were rinsed with saline. The bladder incision was closed using a single layer of simple interrupted pattern with a monofilament synthetic absorbable

suture (Polydioxanone, Serasynth, Serag-Wiessner, Naila, Germany). The abdomen was lavaged with 50 ml/kg saline and was closed in a routine fashion.

Post surgery the cat recovered in the intensive care unit (ICU). Medical and supportive treatments remained as prior to the surgery. Follow-up blood tests revealed a decrease in creatinine levels (6.2 mg/dL) while electrolyte levels remained within the reference range except for phosphate (8.9 mg/dL, RI 4-7.3) (Table 2). There were no remarkable changes in blood glucose (Table 2), PCV and TS values. Vital signs were normal, appetite and urine productions were adequate. The following day his creatinine levels had reduced to 2.38 mg/dL, and phosphate to 4.6 mg/dL (Table 2). Repeat focused ultrasonography of his abdomen revealed no evidence of effusion. The urinary catheter was removed and when adequate urination was observed, the cat was discharged from the HUVTH approximately 36 hours post-surgery. Treatment at home included amoxicillin-clavulonate (15 mg/Kg PO q12h) and enrofloxacin (5mg/Kg PO q24h).

Urine culture and sensitivity isolated a *Staphylococcus spp*., sensitive to both amoxicillin-clavulonate and enrofloxacin.

Ten days post discharge, at a follow up examination, the owner reported some stranguria and pollakiuria evident since their discharge, but with progressive improvement in urination. The cat was bright and alert, with normal hydration status, and a small palpable urinary bladder. It was not possible to obtain a urine sample nor a blood test. Urge incontinence due to cystitis was suspected, and the antibiotics were continued for another 10 days.

On a telephone follow up two years later, the owner reported the cat to be healthy, with no recurrence of clinical signs.

DISCUSSION

This is the first case recorded in Israel of urinary obstruction due to a pellet lodged in the urethra of a cat. This cat signalment matches previous reports implicating that young males are overrepresented with gunshots (2, 3, 20).

Cases of urethral obstruction due to a bullet are rare in dogs and cats, though three reports in a cat (7, 16, 19), and two in a dog (17, 18), were published. These cases were presented with non-specific clinical signs relating the urinary system such as stranguria, dysuria, pollakiuria and hematuria. Most cases were of young animals (16, 18, 19). No history of previous trauma was recorded and no evidence of traumatic injury was found on the skin of these animals. In one case of a cat, the bullet was lodged in the distal urethra, and contrast radiography revealed a fistulous tract extending from the urethra. A perineal urethrostomy was made (16). In another case, the bullet was lodged in the proximal urethra of the cat, and because of intermittent signs of obstruction, it was suspected that the bullet had moved every so often in and out of the urethra (19). In the third feline case, it is not clear whether the clinical signs were the result of a pellet obstruction or related to FIC, combined with a bacterial cystitis. The bullet was revealed on radiography after the urinary blockage was solved (7). In one case of a dog, the bullet was lodged in the mid-urethra, and was pushed using a urinary catheter to the urinary bladder and excised using cystotomy (18). The last report featured a dog with a bullet within his penile urethra, causing incomplete obstruction of the lower urinary tract. The bullet was removed by urethrotomy (17).

Projectiles may move from their original lodging to a different resting point in the body by motion of the patient or gravitation (1). It has been reported of an air gun pellet lodged in the urethra of a cat causing intermittent signs of obstruction presumably due to constant movement in and out of the urethra (7, 19). The cat in this report may also have suffered from a similar condition until the bullet became permanently lodged in the urethra. Only then, the clinical signs were severe enough to be recognized by the owners, together with systemic illness contributed from infection in the abdominal cavity and urinary tract.

This present case report, as those mentioned, reinforce the fact reported that owners are usually oblivious to the fact that their pet had been shot at, and without accurate history, the wounds might be overlooked, or mistaken as a bite wounds or vehicular trauma (1, 26). Taking into consideration that the clinical findings may be misleading as well, these cases also reinforce the importance of survey radiographs as an essential diagnostic tool in cases of suspected urinary obstruction, especially when clinical signs are nonspecific, and even when other causes (such as FIC) are suspected. Though uncommon, reports of a

urinary foreign objects in dogs and cats, may emphasis the importance of radiographs for a complete diagnosis (6, 7, 9, 10, 12-15, 20, 21). Information obtained from survey radiograph may be limited because of the poor inherent contrast between some of the structures in the lower urinary tract (16). As seen in other similar cases (8, 16, 19), contrast radiographs are a non-invasive convenient way of revealing the identity and severity of the problem. In this case retrograde urethrography revealed an obstructed urethra with no other fistula or leakage of the urinary tract. Ultrasound may be another useful tool in diagnosing foreign bodies in the urinary system (6, 7, 10, 11), as well as for screening for additional complications, as in this case.

Radiographic presence of a retained projectile without an identifiable entry wound might suggest that the injury had not occurred recently. In this case, the injury might have occurred relatively recently to admission as the owner remembered noticing the cat wailing abnormally 2 weeks before arriving at the clinic. The bullet entry wound could have healed in two weeks, thus not appearing on physical examination.

The cat in this report could have easily been categories as FIC ill if no radiographs were performed. He was also urinary catheterized with no exceptional difficulties, and the only unique finding was the relative difficulty of extracting fluids from the bladder through the catheter after inserting them while rinsing, and the relatively poor clinical response to the initial medical treatment. It is presumed that the bullet was causing an intermittent/partial obstruction of the urethra, thus fluids inserted with the force of the syringe flowed without difficulty, and the extraction of fluids was more difficult with no substantial force to push them out through this partial obstruction.

The poor response to the initial treatment, as seen with the consistent slowly improving hyperkalemia, hyperphosphatemia and azotemia, may be due to a long duration of illness with no treatment, possibly leading to serious insult to the kidneys, with possible systemic effects of the abdominal and urinary infections, especially since pyelonephritis could not be ruled out. The mild renal pelvis dilatation found on ultrasonography (though not specific), and the high creatinine levels (even when properly hydrated and feeling well) at discharge supports this theory, though Chronic kidney disease (CKD) might also have played a role. Additional diagnostics at follow ups are required for CKD to be diagnosed, as a new entity, or as one that was present prior to this incident.

It was assessed at one point that this cat's low blood glucose levels, along with the above-mentioned clinical signs, septic peritonitis and severe azotemia were indicative of sepsis, with the septic peritonitis or cystitis/pyelonephritis being the source of the infection. The normal leukocyte count in the CBC may have been the result of leukocyte production struggling to meet the demands of leukocyte consumption to the peritoneum. Other explanations are possible, according to the trend in the leukocyte counts, which was not evaluated. The low ionized calcium seen at arrival may be the cause of high phosphorous levels or may indicate secondary pancreatitis, thus another contributing factor to this cat relatively long recovery. Low sodium levels at arrival may indicate gastrointestinal fluid loss, or, along with low sodium to potassium ratio, be the result of the abdominal effusion. The mild effusion in the abdomen of this cat, might be partially related to the gunshot injury directly causing tissue trauma, and if that is the case, this implies the injury to be in the recent past. Though these fluids could not be proven as urine (since the creatinine exact measurement was not determined), we cannot rule out this possibility. If that is the case, it may be presumed that the bullet injured the urinary tract directly from the initial insult to the body, and caused a urinary leakage. Other causes of urinary tract leakage cannot be ruled out, including an iatrogenic trauma. It is also presumed that the bullet was lodged in the urinary bladder, and sometime after initial entry, the bullet was pushed with the urine into the urethral lumen of the cat, causing the partial obstruction. It is well known that the urinary bladder heals relatively quickly from trauma, regaining 100% of normal tissue strength in 14 to 21 days (27). It is also known that tissues with elastic properties, such as the bladder, are better able to sustain projectile trauma (1). Thus, these facts may explain why the bullet entry wound to the urinary tract was not seen on imaging or on surgery. Septic peritonitis was likely to cause some or all of the abdominal effusion in this case. A possible explanation for this cat's septic peritonitis may be due to the infected urinary leakage. This urinary infection may be related to a previous cystitis unrelated to this incident,

or from the contaminated bullet lodged in the leaking urinary bladder (7, 12, 20). One case report challenged this theory claiming that no cystitis had developed during two years follow up of a cat with an air gun pellet in his urinary bladder (22). Another explanation for the septic peritonitis is contamination of the abdominal cavity due to the contaminated bullet passing through, or/and penetration of surrounding external flora via the bullet entrance (3).

Another issue with retained bullets might be the danger of lead poisoning. Lead poisoning is rarely noted with retained bullets (1, 26), but could be easily overlooked as clinical signs are vague and nonspecific (28). The handful of reports of foreign bodies within the urinary system of dogs and cats imply that this issue might not be of clinical importance.

Other related reported complications of a foreign body in the urinary system include endocarditis (reported as a result of a toothpick lodged in the urinary bladder (13), introducing systemic infections the same way a bullet might do), fistulous tract (11, 16, 29), urinary tract strictures (29) and urinary tract recurrent infections (29).

Therefore, it may be wise when coincidentally finding evidence of a retained bullet with no related clinical signs, to monitor the animal closely with routine follow ups and survey radiograph, even if it concludes with no related clinical consequences (22).

In conclusion, when dealing with a urinary obstruction which doesn't respond to the initial therapy as expected, it is advisable to look for a complication or for the elementary cause of the obstruction. In this case, exploratory celiotomy was indicated for extracting the pellet, rinsing the abdomen, and exploration of additional trauma and infection complications to the abdominal cavity organs.

This case, to the best knowledge of the authors, is the first record of a urinary obstruction due to a pellet lodged in a cat's urethra in Israel, to be published in the veterinary literature. In addition, this is the first case of a urinary pellet obstruction in veterinary medicine, reported with a complication of septic peritonitis. This case emphasizes the importance of radiographs when history and clinical findings are vague, and stress the fact that gun shots may be easily overlooked, and may even be discovered only as an incidental finding.

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