

Clinical case presentation: life threatening Group A sepsis secondary to HyCoSy

Abstract

Hysterosalpingo contrast sonography (HyCoSy) is a commonly performed procedure in the investigation of infertility. Infection is an uncommon complication of this procedure. Should it occur, it is generally mild and amenable to outpatient treatment with oral antibiotics. We present a case of an immunosuppressed woman who underwent HyCoSy for investigation of secondary infertility and developed life-threatening sepsis with Group A streptococcus.

Keywords: group A streptococcus, HyCoSy, hysterosalpingography, sepsis.

Introduction

HyCoSy is a commonly performed procedure in the investigation of infertility. Whilst infection is a recognised complication of this procedure, it is uncommon and post-procedural prophylactic antibiotics are not routinely prescribed. Infection, if it does occur, is rarely serious and generally amenable to outpatient treatment with oral antibiotics. We report a case in which an immunosuppressed woman rapidly developed life-threatening sepsis caused by Group A streptococcus after undergoing a HyCoSy.

Case report

A 35-year-old woman underwent a HyCoSy for investigation of secondary infertility. She had a background of psoriatic arthritis for which she was treated with fortnightly Humira (TNF- α blocker) injections. She had one pregnancy seven years ago, which was terminated at 20 weeks gestation following the prescription of methotrexate, cyclophosphamide and sulphasalazine during the first trimester. Prior to the HyCoSy the patient had unsuccessfully attempted conception for 18 months.

The HyCoSy demonstrated patent fallopian tubes. No vaginal swabs were conducted prior to the procedure.

Twenty-four hours following the HyCoSy, she developed abdominal pain, fevers, offensive vaginal discharge, vomiting and diarrhoea. Over the following forty-eight hours, her condition deteriorated and she presented to the local emergency department.

On presentation, she was febrile (40.2°C), tachycardic and hypotensive with associated abdominal tenderness and malodorous vaginal discharge. Investigation indicated hyponatraemia (Na 126), hypokalaemia (K 3.0),

renal failure (urea 14.7, creatinine 277), raised white cell count of $19.7 \times 10^9/L$, raised CRP of 220 and slightly prolonged clotting times (PT 15.7, APTT 38, INR 1.3).

CT abdomen/pelvis showed two pelvic collections (84 x 51 x 36 mm and 32 x 27 x 24 mm), with mesenteric fat stranding and a moderate amount of fluid in the pelvis, in keeping with peritonitis. Transvaginal ultrasound suggested purulent fluid in the Pouch of Douglas, right adnexa and vesico-uterine pouch. The largest collection measured 72 x 47 x 9 mm.

The patient was diagnosed with septic shock and acute kidney injury secondary to sepsis. She was admitted to the intensive care unit (ICU) and commenced on IV Ceftriaxone, Metronidazole and Gentamicin. She remained anuric despite resuscitation and haemodialysis was commenced.

Genital culture was positive for Group A streptococcus and anaerobes (later a central venous catheter tip culture was also positive for Group A streptococcus). Blood and urine cultures returned a negative result. Antibiotics were changed to Tazocin and Metronidazole.

Seventy-two hours after ICU admission the patient clinically improved. Urine production commenced and haemodialysis was ceased. A radiologically-guided drainage of the abscess was attempted but was unsuccessful.

Eight days following ICU admission she deteriorated becoming febrile and tachycardic with increased abdominal pain and profuse diarrhoea.

Twenty four hours later found her increasingly unwell, spiking temperatures to 40.8°C with persistent tachycardia. Her abdominal pain and distension increased, diarrhoea ceased and bowel sounds were absent on auscultation.

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Authors	No of patients	Indications	Intervention	Exclusions	Infectious complications	Other reported complications	Antibiotics
Marshak, <i>et al.</i> (1950)	2500	Menometrorrhagia, dysmenorrhoea, sterility, fibroid uterus, postmenopausal bleeding	Hystero-graphy - 1-6cm ³ dye injected; hysterosalpingography - using water soluble dye or oily media (lipiodol)	Signs of PID, pregnancy, purulent vaginal discharge, serious constitutional disease	Peritonitis 0.28% (7 pts, all had a hx of prior PID - of these 4 recovered with antibiotics, 3 required colpotomy for pelvic abscesses)	Pain 80%; peritoneal irritation 1.38%; endometritis 1.78%; urticaria 0.36%; oil emboli 0%; bleeding 0.01%; uterine perforation 0.04%	None
Measday, <i>et al.</i> (1960)	623	Infertility, repeated miscarriage, pelvic pathology, congenital abnormality	Hysterosalpingography using Lipiodol, Neohydriol fluid, Diodone and Viskiosol 6	None specifically mentioned	Acute inflammation 1.27% (acute salpingitis 0.63%, recrudescence of chronic salpingitis 0.16%, pelvic cellulitis 0.47%)	Venous intravasation 0.47%; pain 3.96%; local tissue reaction 0.32%	"Prophylactic use of penicillin and sulphonamides seems quite justifiable" in pts with a hx suspicious of PID
Stumpf, <i>et al.</i> (1980)	448	Multiple including infertility, locate IUD, genital tract anomalies, pelvic masses, habitual abortion, fibroids, intrauterine synechiae	Hysterosalpingography with water soluble media (usually Sinografin)	Not mentioned, however 23% had evidence of prior PID	3.1% febrile morbidity (fever >100.4oF within 24hrs, clinical signs of peritonitis), all hospitalised for IV antibiotics, 1 pt required TAHBSO. 9 pts had received prophylactic antibiotics, 10 had hx of PID. HSGs abnormal in all these pts.	Not reported	Antibiotics given to 31.2% of pts (usually ampicillin, sometimes tetracycline) for 2 days prior & 2 days following HSG.
Moller, <i>et al.</i> (1984)	116	Infertility	Hysterosalpingography (HSG) using water soluble contrast medium (Isopaque Amine)	Signs of current PID or PID in the last 12 months; antibiotic use in the preceding 2 weeks	PID 3.45% (4 pts, 2 positive for Chlamydia, 1 positive for M. hominis). All had tubal pathology.	None reported	None
Forsey, <i>et al.</i> (1990)	118	Infertility	Hysterosalpingography (HSG) using aqueous contrast medium (Urografin 290)	HSG delayed + antibiotics if serological evidence of Chlamydia	Pelvic infection 4% (5 pts, 2 needed hospitalisation); all these pts had tubal damage	None reported	If serological evidence of Chlamydia pts were treated & HSG delayed for 1 month
Jeanty, <i>et al.</i> (2000)	115	Infertility	Sonohysterography with 5-10mL saline, then insufflation with small amounts of air	Not mentioned	None	Cramping 26.3%; shoulder pain 2.7%; vasovagal reaction 0.87%	None
Sladkevicius, <i>et al.</i> (2000)	67	Infertility	Hysterosalpingo contrast sonography (HyCoSy) using Echovist	None reported	None reported	Mild pain 73%; moderate or severe pain 7.5%; nausea 9%; vomiting 3%; diarrhoea 3%; sweating 3%; hypotension 1.5%; vasovagal 4.5%	None
Dessole, <i>et al.</i> (2003)	1153	Abnormal bleeding, infertility, thickened endometrium, mullerian abnormalities, Asherman syndrome	Sonohysterography using 5-20mL 0.9% NaCl	Signs or symptoms of PID, abnormal Pap, pregnancy, risk factors for endometrial cancer in postmenopausal women	Post-procedural fever within 5 days 0.78% (0.34% spontaneous resolution within 24hrs, 0.43% required antibiotics). Two pts developed severe infection requiring surgery.	Moderate or severe pelvic pain 3.81%; vaginal symptoms 3.47%; nausea 1.04%; vomiting 0.52%	None
Savelli, <i>et al.</i> (2009)	669	Infertility	Hysterosalpingo contrast sonography (HyCoSy) using saline and air bubbles	PID or vulvovaginal infection, pregnancy, hydrosalpinx on TV US	Post-procedural fever / PID / peritonitis 0%	Mild pelvic pain 49.7%; moderate pain 13.5%; severe pain 6.8%; vasovagal reaction 4.9%	None
Marci, <i>et al.</i> (2013)	632	Infertility	Hysterosalpingo contrast sonography (HyCoSy) using up to 20mL of air and 10mL saline	<1yr infertility; abnormal bleeding; active PID; uterine malignancies	Nil	24.36% mild pain; 9.96% moderate pain; 6.48% severe pain; 4.11% mild vasovagal reaction	No antibiotics. Pre-procedural vaginal & cervical swabs taken.

An abdominal X-ray confirmed distended bowel up (no free gas). Her white cell count rose to $37.7 \times 10^9/L$, her haemoglobin reached a nadir of 88g/L and platelets were $827 \times 10^9/L$.

Due to the significant clinical deterioration, a laparotomy, drainage of pelvic abscess and pelvic washout was attempted. This revealed extensive adhesions. Blunt dissection of adhesions

was attempted, resulting in a small serosal tear to the sigmoid colon (repaired). Further dissection of adhesions was considered too hazardous, and the attempt to drain the pelvic collections was abandoned. The pelvis was washed out and two drains were inserted. The patient returned to ICU where she remained intubated until the following day.

She remained in intensive care another week, experiencing a severe, prolonged ileus, which required an NG tube and total parenteral nutrition. Her recovery was further complicated by an acute lung injury secondary to sepsis, characterised by bilateral pleural effusions causing tachypnoea and oxygen desaturation.

Thirty-three days after admission the patient was discharged to rehabilitation. Several months after her discharge from hospital she underwent IVF. She recently delivered a healthy full term infant.

Discussion

Infection as a consequence of HyCoSy is rarely serious and generally amenable to outpatient treatment with oral antibiotics.

There are, however, isolated case reports of severe infection secondary to hysterosalpingography (HSG) procedures. Nielson¹ in 1946 referred to a 38-year-old patient who underwent HSG, became unwell three days post-procedure, and died fourteen days later from a diffuse peritonitis. Stumpf² reported a case in which one patient required a total abdominal hysterectomy and bilateral salpingo-oophorectomy as she failed to respond to parenteral antibiotic therapy initiated for an infection secondary to HSG.

Literature relating to infection secondary to HyCoSy is sparse, with available studies reporting an infection rate between 0–4%^{2–11} (Table 1). The majority of these cases were mild and amenable to outpatient treatment with antibiotics. Routine antibiotics were not given in any of these studies. Of note, several studies^{2–4} reported that all infectious complications occurred in patients whose HSG/HyCoSy was abnormal. The largest study, by Marshak⁵ in 1950 in which there was an incidence rate of peritonitis of 0.28% in 2,500 women undergoing HSG, all seven cases occurred in women with a history of prior pelvic infection (tubal status at time of HSG was not reported).

The infection rate secondary to HyCoSy or HSG is likely to be influenced by a number of factors: the rate of undiagnosed current PID in the population being studied; prior history of PID, especially if hydrosalpinx has occurred; the microbial milieu of the vagina, specifically the presence of virulent pathogens such as Group A streptococcus; the patient's immune status; pelvic abnormalities including anatomical anomalies (eg, hydrosalpinx which could provide a reservoir for the pooling of fluid) or other pathology.

This case report is important as it highlights the fact that serious infections, whilst rare, can complicate HyCoSy. Pre-procedural genital swabs and prophylactic antibiotics (which include coverage for group A streptococcus) should

be considered in the following groups of patients: known or suspected immune-suppression; significant cardiac conditions; hydrosalpinx or other abnormalities detected at the time of HyCoSy; and known or suspected pelvic inflammatory disease. In the latter case, pre-procedural swabs should be taken and if positive, infection treated prior to HyCoSy. Women with a history of prior PID should also be considered for antibiotics on a case-by-case basis.

Conflict of Interests / Funding

Nil.

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