

Testicular vein thrombosis mimicking epididymo-orchitis after suspected Covid-19 infection

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Mark S Whiteley^{ID}, Omar Abu-Bakr
and Judith M Holdstock

Abstract

A 70-year-old man presented to our vein clinic with intermittent and recurrent left testicular and groin pain, clinically resembling epididymo-orchitis. He had never had any genitourinary problems until contracting a severe flu-like illness in January 2020, strongly suspected to have been Covid-19. He had failed to respond on four separate occasions to antibiotics prescribed by his GP and had only responded on these occasions to aspirin. Duplex ultrasonography at our clinic showed thrombosis of the left testicular vein with venous collateral formation. The testicle itself showed mild oedema, but a reduced arterial flow supporting the pain to be secondary to thrombosis. Covid-19 is known to be associated with venous thromboembolic disease, but usually in patients sick enough to be hospitalised and particularly in those requiring intensive care. This man appears to have had a left testicular vein thrombosis secondary to relatively mild Covid-19 infection, as he did not require hospitalisation.

Keywords

Covid-19, thrombosis, gonadal vein, testicular vein, spermatic vein

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Case

A 70-year-old man presented to our vein clinic in November 2020 with a history of intermittent and recurrent bouts of pain associated with his left testicle and groin. In January 2020, he had a severe febrile illness that started following a visit to Australia that had the clinical presentation of Covid-19. At that time, he had no access to a test for the virus to confirm the diagnosis and this was thought to be a severe influenza type illness. However, his wife and the two younger friends whom they were staying with, all developed a similar illness.

Generally, he was very fit and well. He had a body mass index (BMI) of 25.4, was a non-smoker and had no history of any venous thromboembolic disease, heart attack, stroke or diabetes. He was not on any regular medication.

The patient recovered from that acute illness without problems and shortly afterwards, developed a tender painful left testicle and epididymis, with pain extending into the left inguinal canal area. He had never had any previous episode of similar symptoms and had never had any previous genitourinary problems.

His General Practitioner diagnosed epididymo-orchitis and he was given a course of antibiotics that had no effect. However, starting regular aspirin reduced pain and discomfort.

Over the subsequent 9 months, he had intermittent recurrences of these symptoms. On three further occasions, he had courses of antibiotics for suspected epididymo-orchitis, none of which gave any improvement. The only symptomatic relief he got during an attack was by taking aspirin regularly, 600 mg qds for as long as the pain lasted.

In view of this atypical history, it was suggested he come to a venous clinic for duplex ultrasonography of his left testicle, scrotum, and testicular vein and artery.

On examination, the testicle had the normal lie with no ‘bell-clapper’ abnormality that might suggest intermittent torsion.

The Whiteley Clinic, Guildford, UK

Corresponding Author:

Mark S Whiteley, The Whiteley Clinic, Stirling House, Stirling Road, Guildford GU2 7RF, Surrey, UK.
Email: mark@thewhiteleyclinic.co.uk



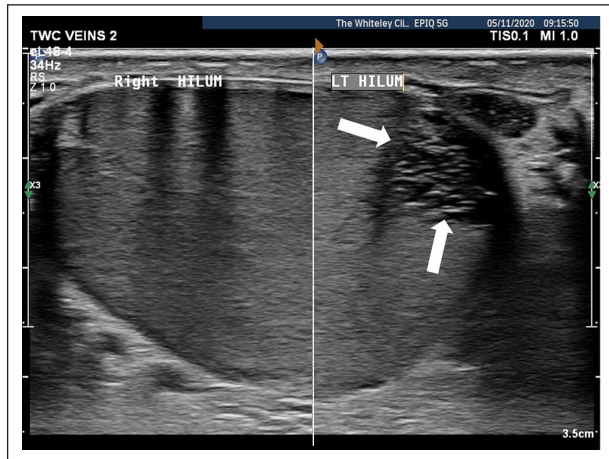


Figure 1. Duplex ultrasound of the hilum of each testicle – right normal and left showing some local oedema (white arrows).

Duplex ultrasound of the left testicle showed mild oedema when compared to the right (Figure 1) but reduced arterial flow within the testicle itself. Duplex of the testicular vein showed thrombosis distally (Figure 2) with complete occlusion and minor venous collateral formation. The arterial inflow was present but reduced compared to the right side.

A diagnosis was made of testicular vein thrombosis, probably secondary to Covid-19 and he was referred to urology. He has subsequently undergone investigations for occult malignancy and none has been found.

His care under urological advice has been conservative. Six months after presentation, his testicular vein was still thrombosed and any discomfort relieved by aspirin.

Discussion

Testicular vein thrombosis is a very rare condition that was first described in 1903 (see Table 1). A literature search has identified 41 cases of assorted thromboses of the pampiniform plexus, spermatic vein and/or testicular vein. Five were in children, most were on the left and only two bilateral. It can be seen from Table 1 that before non-invasive imaging was widely available, surgical exploration and intervention was the norm. However, with the advent of non-invasive imaging, such thromboses are more often managed non-operatively mainly by anticoagulation or anti-inflammatory medication.

The presentation varied considerably but appears to be mainly acute testicular pain and swelling if the pampiniform plexus was involved (including varicocele), inguinal mass and pain if the spermatic vein in the cord was thrombosed, and flank pain with testicular pain without scrotal swelling if the testicular vein was thrombosed. However, this is a generalisation from reading the cases and making the table, but it is complicated by the terminology used by some authors. Some speak of the spermatic vein meaning the veins in the scrotum, some in the inguinal canal and at least one using the term to mean the vein connecting to the left renal vein.

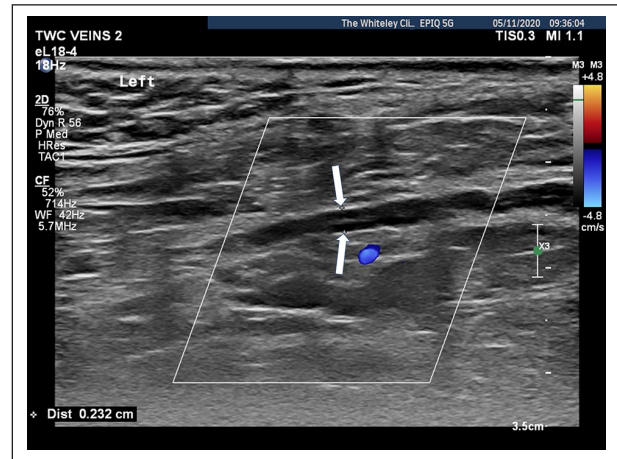


Figure 2. Duplex ultrasound showing thrombosed and left testicular vein with no flow (cursors showing reduced diameter of thrombosed vein shown by white arrows).

As can also be seen in the table, most of the case reports show no obvious underlying cause, or simple causes such as exercise, exertion or local trauma. Some patients showed underlying thrombophilic tendencies and three had intra-abdominal inflammatory conditions – amoebic dysentery, ischaemic colitis and ulcerative colitis. However, none mentioned intra-abdominal malignancy.

Interestingly, a study by Lenz and colleagues¹ comparing a series of 39 patients in their institution with reported testicular vein thrombosis between 1995 and 2015 with a selection of patients with deep vein thrombosis (DVT) reported 59% were associated with malignancy. However, in many of these cases, the testicular vein thrombosis was found as an incidental finding during staging of the malignancy, and once in the follow-up of an abdominal aortic aneurysm, and the thrombosis was not the presenting problem. There is little information as to the few who might have presented with the symptoms and signs of testicular vein thrombosis.

Previous reports of this condition have also often included testicular vein thrombosis in neonates secondary to renal vein or more extensive thromboses, which is clearly a completely different condition,²⁻⁴ as is a reported case of a left renal vein thrombosis with retrograde flow down the testicular vein.⁵

An increased incidence of venous thromboembolism has been reported in patients infected with Covid-19, secondary to thromboinflammation.⁶ However, a published registry of 1114 patients with Covid-19 infection found increased thromboembolism in patients in intensive care and treated as inpatients, but no increased incidence of thromboembolism in those treated as outpatients.⁷

The commonest site of venous thrombosis in Covid-19 patients appears to be in-situ thrombosis of the lungs⁸ with DVT and superficial venous thrombosis being less common.⁹ There have now been three cases reported of ovarian vein thrombosis secondary to Covid-19,¹⁰⁻¹² but we have not been able to find a report of testicular vein thrombosis yet.

Table 1. Table listing 41 reports cases of thromboses of the pampiniform plexus, spermatic vein and/or testicular vein.

Age	Side	Symptom duration	Presenting symptoms	Associated factors	Investigations	Treatment	Outcome	Vein(s) involved	First author and journal
N/A	Left	N/A	Acute pain in scrotum	N/A	None	N/A	N/A	Spermatic vein	Senn NA. Surgical clinic. Clin Rev 1903;4:241–245
N/A	N/A	'Sudden'	Acute pain in Scrotum	N/A	None	"Excision"	N/A	Spermatic vein	Senn NA. Int Clin 1904;4:148–160
33	Right	3 weeks	Pain in testicle	Amoebic Dysentery	None	Conservative Management	Resolution	Pampiniform plexus	J.W. Tomb. Transactions of The Royal Society of Tropical Medicine and Hygiene, Volume 20, Issue 4, 25 November 1926, Pages 288–289
41	Left	5 weeks	Pain in testicle and swelling	None	None	Orchidectomy	N/A	Pampiniform plexus	McGavin D. The Lancet 1935; 226 (5842): 368–369
57	Left	4 weeks	Pain in testicle	1 Stone weight loss	None	Orchidectomy	N/A	Pampiniform plexus	
27	Left	16 h	Dull pain in testicle and inguinal region	Testicle Horizontal Lie	None	Exploration and biopsy of vein	N/A	Pampiniform plexus	Anselme P. Aust N Z J Surg. 1977 Dec;47(6):801–802
7	Left	N/A	Pain groin, swollen cord, oedema scrotum	None	None before op	Exploration – Anti-inflammatory medication	Resolution	Pampiniform plexus	Coolsaet B. J Urol. 1980 Aug;124(2):290–291
10	Left	N/A	Pain and oedema of scrotum	Previous testicular fixation	Venogram	Anti-inflammatory medication	Resolution	Pampiniform plexus	
15	Left	11 days	Painful scrotal swelling	None	None	Excision of veins to external ring	N/A	Pampiniform plexus	
44	Right	Several hours	Tender swelling mid-scrotum	Playing baseball and tennis	None – Observed for 4 days	Excision thrombosed vein to internal ring	N/A	Pampiniform plexus	Rothman D. J Med Soc N J. 1981 Sep;78(10):681
33	Left	10 days	Inguinal pain	None	None	Excision thrombosed vein to internal ring	N/A	Spermatic vein	Vincent MP. Urology. 1981 Feb;17(2):175–176
33	Left	Recent	Inguinal tenderness and mass	Varicocele	None – Observed for 1 week	Excision thrombosed varicocele and ligation	Resolution	Thrombosed varicocele	Roach R. J Urol. 1985 Aug;134(2):369–370
42	Left	1 week	Groin lump tender	None	Excretory urography (IVP)	Excision thrombosed veins	Left ischaemic testicle – Orchiectomy, then right spermatic vein thrombosis treated with anticoagulants	Spermatic vein	

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Table 1. (Continued)

Age	Side	Symptom duration	Presenting symptoms	Associated factors	Investigations	Treatment	Outcome	Vein(s) involved	First author and journal
19	Left	Hours	Groin pain	Vigorous exercise – rowing sit-ups	None	Excision thrombosed veins	Resolution	Spermatic vein	Isenberg JS. J Urol. 1990 Jul;144(1):138
23	Left	1 day	Painful bulging in left inguinal region	Heavy lifting boxes	Ultrasound	Excision thrombosed varicocele and ligation	Resolution	Thrombosed varicocele	Gleeson MJ. Br J Urol. 1992 Nov;70(5):567
43	Left	During hospitalisation	Acute scrotal pain	Ischemic colitis and antiphospholipid syndrome	Doppler Ultrasound	Orchidectomy	N/A	Testicular vein and pampiniform plexus	Wu VH. J Ultrasound Med. 1995 Jan;14(1):57–59
6	Right	3 months	Swelling of testicle	None	Ultrasound	Exploration and biopsy of vein	6 months later further episode	Pampiniform plexus	Campagnola S. Minerva Urol Nefrol. 1999 Sep;51(3):163–165.
8	Left	24 h	Pain in abdomen and testicle	Henoch-Schoenlein purpura	Ultrasound	Steroids – Exploration at 2 weeks	Resolution	Spermatic veins	Diana A. J Pediatr Surg. 2000 Dec;35(12):1843.
N/A	N/A	N/A	N/A	Varicocele	None	Conservative Management	Resolution	Varicocele	Kleinclauss F. Prog Urol. 2001 Feb;11(1):95–96.
28	Left	3 days	Pain in scrotum and inguinal region	None	Doppler Ultrasound	Oxerutin medication + rest – delayed varicocele ligation and vein excision	Resolution	Spermatic veins	Martino G. Chirurgia 2005 December;18(6):501–506.
27	Left	2–3 h	Painful mass inguinal area	Lifting a patient	None	Exploration	Resolution	Pampiniform plexus	Hashimoto L. J Urol Nephrol. 2006;40(3):252–254.
42	Left	7 days	Pleuritic chest pain – Pulmonary embolism	Contusion left inguinal regions 2 weeks before. Left cryptorchidism treated as infant	CT scan	Oral anticoagulation	Resolution	Spermatic vein	Castillo OA. Urol Int. 2008;80(2):217–218.
40	Right	4 days	Abdominal pain	Terminal ileitis and thrombophilia	CT scan	Anti-inflammatory medication	Resolution	Testicular vein	Schwartz JH. J Urol. 2008 Sep;180(3):1124.
33	Left	3 days	Acute pain in scrotum	Cycling	Duplex ultrasound	Conservative management	Resolution	Pampiniform plexus	Doerfler A. Prog Urol. 2009 May;19(5):351–352.

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Table 1. (Continued)

Age	Side	Symptom duration	Presenting symptoms	Associated factors	Investigations	Treatment	Outcome	Vein(s) involved	First author and journal
21	Left	Hours	Acute pain in scrotum	High intensity exercise in combat attire – Horizontal lie of testis	None	Exploration and biopsy of vein	1 month later right pampiniform plexus thrombosis after exercise	Pampiniform plexus	Kayes O. Ann R Coll Surg Engl. 2010 Oct;92(7): W22–W23.
28	Left	14 days	Left inguinal induration + abdominal pain + testicular pain	Intermittent left loin pain and Haematuria for years	Duplex ultrasound + CT scan	Excision of spermatic vein from renal vein caudally	Resolution	Thrombosed varicocele + spermatic vein secondary to nutcracker	Mallat F. Int J Case Rep Images 2014;5(7):519–523.
43	Right	2 days	Scrotal pain and swelling	Absent Inferior Vena Cava and heterozygous factor V Leiden mutation	Ultrasound and venogram	Anticoagulation	Resolution	Thrombosed testicular vein	Chi AC. Urology. 2015 May;85(5): e39–e40.
35	Right	N/A	Testicular pain and swelling	Varicocele + heterozygous factor V Leiden mutation	Duplex ultrasound + MRI	Anticoagulation	Resolution	Thrombosed testicular vein + spermatic vein	Bolat D. Can Urol Assoc J. 2016 Sep-Oct;10(9–10): E324–E327.
23	Left	2 days	Left testicular and groin pain – radiating to left flank	None	Ultrasound	Anti-inflammatory medication	Resolution	Pampiniform plexus	Tanner R. Ir Med J. 2016 Jan;109(1):347–348.
29	Right	4 h	Testicular pain, low grade temperature and sweating	Possible trauma 2 days before. Age 8 left torsion and orchidopexy	Ultrasound	Anticoagulation + anti-inflammatory medication + antibiotics	Resolution	Pampiniform plexus	Caño-Velasco J. RRev Int Androl. 2018 Jan-Mar;16(1):38–41.
39	Bilat	2 days	Scrotal pain and swelling	Protein C deficiency	Ultrasound + CT	Anticoagulation + antibiotics	6 days later right gonadal vein thrombosis – Then resolution	Left varicocele and right testicular vein	Kamel K. African J Uro 2018, Vol 24 (1), 14–18.
31	Left	20 days	Dull ache inguinal and scrotal areas	8-h drive	Ultrasound + contrast enhanced ultrasound + CT	Excision of thrombosed vein	Resolution	Spermatic vein	Liu M. Am J Emerg Med. 2018 Dec;36(12):2339.e1–2339.e3.

(Continued)

Table 1. (Continued)

Age	Side	Symptom duration	Presenting symptoms	Associated factors	Investigations	Treatment	Outcome	Vein(s) involved	First author and journal
36	Right	24 h	Right flank pain then acute right inguinal and scrotal pain	Housework; ulcerative colitis; left orchidectomy 6 months earlier	Duplex ultrasound + CT	Exploration	Resolution	Spermatic vein	Murthy PB. <i>Urology</i> . 2018 Sep;119:32–34.
54	Left	2 days	Left inguinal pain	None	Ultrasound	Anticoagulation + anti-inflammatory medication and venotonics	Resolution	Pampiniform plexus	Ouanes Y. <i>Urol Case Rep</i> . 2018 Jun 7;20:28–29.
68	Left	1 week	Left scrotal pain	None	Duplex ultrasound	Exploration and removal of varicocele	Resolution	Varicocele	Raghavendran M. <i>BMC Urol</i> . 2018 May 8;18(1):34.
40	Left	2 h acute – 6 months previous intermittent pain	Acute pain left scrotum	None	Duplex ultrasound	Exploration and removal of varicocele	Resolution	Varicocele	Robayna A. <i>Urol Int</i> . 2018;101(1):117–120.
14	Right	4 days	Swelling and dull pain right inguinal and scrotal pain + fever	None	Duplex ultrasound	Right orchidectomy	Resolution	Testicular vein	Hussain JM. <i>Urology</i> . 2019 Aug;130:144–147.
65	Bilat	1.5 months – severe 4 days	Swelling inguinal region bilaterally then upper scrotum	Labourer	Ultrasound	Left inguinal exploration	Resolution	Pampiniform plexus	Bakshi S. <i>Surg Case Rep</i> . 2020 Mar 5;6(1):47.
50	Left		Scrotal pain and swelling	None	Duplex ultrasound	Anticoagulation + antibiotics	Resolution	Pampiniform plexus	Lay Keat WVO. <i>Urol Case Rep</i> . 2019 Sep 5;28:101000.
12	Left	3 days	Left testicular pain	Factor V Leiden heterozygous mutation; Nut-cracker syndrome suggested on ultrasound	Duplex ultrasound	Exploration then anticoagulation and antibiotics	Resolution	Pampiniform plexus	Pérez-Ardavín J. <i>Cir Pediatr</i> . 2020 Apr 1;33(2):99–101.
55	Left	2 weeks	Scrotal induration and pain	None	Duplex ultrasound + CT	Exploration and excision of vein	Resolution	Spermatic vein	Petca RC. <i>Chirurgia (Bucur)</i> . 2020 Jul-Aug;115(4):505–510.

CT: computed tomography; MRI: magnetic resonance imaging; IVP: intravenous pyelogram. Please see text for other reports of less significance.

Conclusion

We have reported a case of left testicular vein thrombosis causing intermittent attacks of pain and discomfort mimicking epididymo-orchitis following a febrile illness presumed to be Covid-19 in a 70-year-old man with no other underlying medical condition. Venous thromboembolism is known to be associated with Covid-19 infection, although usually in patients who are sick enough to be hospitalised and particularly those ill enough to be admitted to intensive care. In this case, this rare venous thrombosis has occurred in a man who did not require hospitalisation and who recovered from the acute illness without any other complication. The persistent, intermittent and recurrent pain he is getting from his left testicular vein thrombosis was the only sequela of the viral infection.

Author contributions

The study's conception and design was done by O.A.B. and J.M.H.; analysis and interpretation by M.S.W., O.A.B. and J.M.H.; data collection by O.A.B. and J.M.H.; writing the manuscript by M.S.W.; and critical revision of the manuscript by M.S.W., O.A.B. and J.M.H.

Declaration of conflicting interests

The author(s) declared no potential conflicts of interest with respect to the research, authorship, and/or publication of this article.

Ethical approval

Our institution does not require ethical approval for reporting individual cases or case series.

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Informed consent

Written informed consent was obtained from the patient for their anonymized information to be published in this article.

ORCID iD

Mark S Whiteley  <https://orcid.org/0000-0001-6727-6245>

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