



EPIDIDYMO-ORCHITIS IN A 13-YEAR-OLD BOY DURING VARICELLA INFECTION - ULTRASOUND FOLLOW UP

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Varicella is a highly contagious infectious disease that can cause various complications. One of them, epididymo-orchitis, is rare and poorly described in literature, and thus remains seldom thought of, under-diagnosed, and poorly treated. In this report we present the case of a 13-year-old boy initially examined by an infectologist and a pediatric surgeon under the diagnosis of a scrotal bacterial superinfection during a varicella infection. Wrongly treated with antibiotics, he was then examined by a pediatric endocrinologist, diagnosed with epididymo-orchitis as a varicella complication, and treated with acetaminophen, ice packs and scrotum suspension, as the 24-hour window for antiviral therapy initiation was missed. Laboratory test showed no signs of infection, while ultrasonography showed enlargement of the right testicle and epididymis with thickening of tunica albuginea and paratesticular effusion. The ultrasound follow up then showed improvement with each examination and a year later a completely normal finding. The hormonal status was normal during the follow up, so was the sperm count. However, sperm mobility was reduced 5 years later and the patient was diagnosed with asthenozoospermia. Hence we must emphasize the role of a varicella infection and its ability to leave a long term consequence to reproductive health. Having in mind the diminished antiviral therapy and still doubtful complication prevention we have to point out the prevention measures, including vaccination and the development of new antiviral methods.

Keywords: HUMAN HERPES VIRUS 3, EPIDIDYMITIS, ORCHITIS, ULTRASONOGRAPHY

Introduction

Varicella, a highly contagious, common, and self-limited infectious disease, can cause various complications (1). The varicella vaccine has substantially decreased varicella incidence, hospitalizations, and deaths, especially in countries where there is implementation of universal varicella vaccination (1-5). Nevertheless, complications like neurological, haematological, and bacterial superinfections still occur. Epididymo-orchitis as a primary varicella complication is rarely described in the literature, with only several case reports in the last ten decades (5-11).

Case report

We present a case of a 13-year-old who was examined at paediatric endocrinology department due to swelling of the right testicle during a varicella infection with a mild course. Symptoms began on the seventh day of the varicella eruption and included right hemiscrotal pain, swelling, and redness of the right testicle. Varicella formations were in the crust phase (Figure 1).

Our patient was previously examined by an infectologist and a pediatric surgeon. The condition was considered a scrotal bacterial superinfection and, as such, treated with oral co-amoxiclav. As no improvement was noted, our patient was reevaluated by paediatric endocrinologist who diagnosed epididymo-orchitis clinically and confirmed it with scrotal ultrasound.

Ultrasound showed enlargement of the right testicle (Prader 8/10 ml), thickening of tunica albuginea, and paratesti-

cular effusion, with enlargement of the right epididymis as well. (Figure 2.). The left testicle (Prader 6 ml) and epididymis were homogenous, and showed no anomalies.

Laboratory tests were done on the seventh day of the illness, and they showed no signs of infection. We have set the diagnosis for epididymo-orchitis and recommended scrotum suspension with ice packs and acetaminophen.

On the second endocrinology examination, which was two weeks later, the patient was clinically better. Both testicles showed no signs of inflammation or discomfort at the physical exam. Ultrasound still showed hyperechoic reflection and enlargement of the right testicle. Tunica albuginea looked normal, and there were no signs of effusion, but the right epididymis showed cystic hyperechoic elements that were not seen in the previous examination (Figure 3).



Figure 1.
Hemiscrotal swelling at the initial pediatric examination

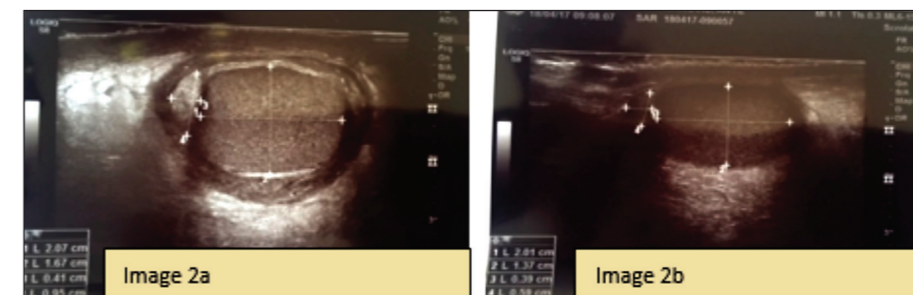


Figure 2.
First ultrasound (2a: right testicle / 2b: left testicle)



Figure 3.
Second ultrasound at the 2 week follow up

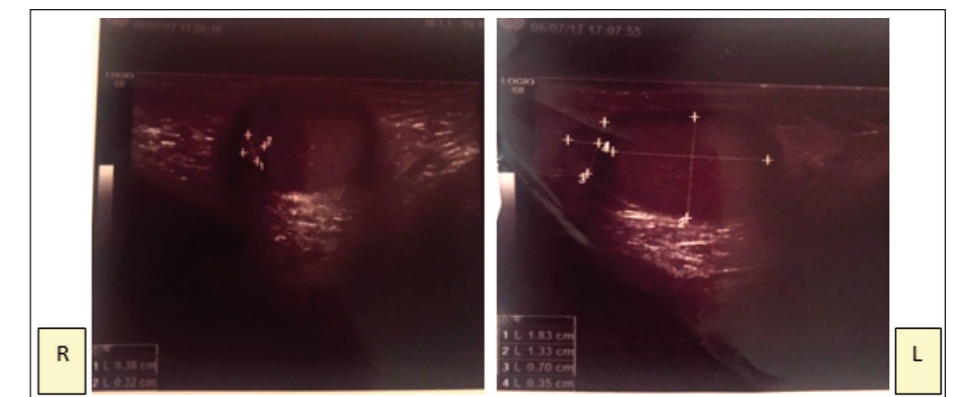


Figure 4.
3rd ultrasound at the 6 week follow up

Six weeks later, control was performed again, and an ultrasound examination showed a slight echoic difference between the testicles. There was no noticeable difference in their volume. The Epididymis could not be clearly visualised and showed oval zones.

One year later, ultrasound showed no difference between both testicles. Hormonal status was checked, and results taken after 1 year and after 5 years were normal as well. Our patient had a clean medical and family history, inclu-

ding surgeries and familial infertility. The growth and development of genitalia and testicular volume were within a physiological range, while varicocele was not present in any of the ultrasonic or physical examinations.

Finally, at the chronological age of 18 (genitalia Tanner 4, testicles Prader 20 ml), we have evaluated Sertoli cell function with a sperm cell count. The total sperm count in the ejaculate was normal at 45×10^6 ($N > 39 \times 10^6$), but sperm motility was disrupted - 77% were not mobile. As a result, the patient has been diagnosed with asthenozoospermia.

Discussion

Orchitis is a well-known complication of viral infections, like mumps, rubella, echovirus, parvo virus, CMV, coxsackie virus, and many others. Blood-borne dissemination is the major route of infection. Testicular involvement is usually unilateral, and epididymitis is associated with orchitis in most cases.

Table 1.
Hormonal status after 1 year (at age 14) and after 5 years (age 18)

Hormonal status	Unit	Age 14	Age 18	Referential interval
LH	IU/L	1,4	6,67	1,3-9,8
FSH	IU/L	1,85	3,41	1,5-12,9
T (total)	nmol/L	1,83-T2/3	11,7-T5	0,087-14,9
Free T	nmol/L	0,031	0,289	0,204-0,637
SHBP	nmol/L	36,6	17,9	14,5-48,4
INHIBIN B	pg/ml	265		25-325

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Bilateral testicles are affected in 15-30% of cases of orchitis (1, 9, 16, 17).

Somehow, orchitis as a complication of varicella is misplaced, underreported, and very rarely described in the literature. There have been 9 cases overall in the last 95 years that have linked chicken pox and orchitis, two of which describe testicular atrophy in children (4-11). In this paper we have ultrasonically demonstrated changes in testicular tissue and processes through inflammation, and recovery as well. Evaluation of Sertoli cells showed dysfunction in sperm motility.

Although it was suggested that orchitis and epididymitis should be added to the list of complications of chicken pox, we still find it difficult to diagnose a connection among them (9, 12, 13). There is a lack of confirmation regarding reproductive abnormalities in cases of varicella infection. Considering that mumps infection accounts for more than 40 percent of orchitis incidence, questions arise about the possibility of fertility interference (16, 17).

Furthermore, in our case, an unnecessary antibacterial treatment happened. The patient was considered to have a skin infection. After we had set the diagnosis, there was another challenge of preventing progression of viral inflammation. Antivirals such as acyclovir were not an option in this phase of illness or circumstances, as they are initiated in the first 24 hours from the onset of symptoms. Even then, according to the recommendations of the American Academy of Paediatrics, such treatment has proven to shorten the symptoms of the disease for 1 day, and the impact on complications is still vague (10-14).

Conclusion

Varicella infection is a very common disease in children, complications such as orchitis and epididymitis are not as rare and they are recognized. It is important to emphasize the role of a varicella infection that can have a long-term consequences to reproductive health

Having in mind the diminished antiviral therapy and still doubtful complication prevention, we must point out the prevention measures. Especially when varicella vaccination is well established in some countries and rising in other countries worldwide. Unfortunately, in Croatia and surrounding countries, consciousness for such measures is still firmly asleep

This case report is the first ultrasonically confirmed and observed case report of epididymo-orchitis caused by a varicella infection. It reminds us that viral load for human fertility is closer than we expect. For now, in anticipation of new antiviral methods, we have to work on raising expanding preventive measures through varicella vaccination.

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SUKOB INTERESA/CONFLICT OF INTEREST
Autori su popunili the *Unified Competing Interest form* na www.icmje.org/coi_disclosure.pdf (dostupno na zahtjev) obrazac i izjavljuju: nemaju potporu niti jedne organizacije za objavljeni rad; nemaju financijsku potporu niti jedne organizacije koja bi mogla imati interes za objavu ovog rada u posljednje 3 godine; nemaju drugih veza ili aktivnosti koje bi mogle utjecati na objavljeni rad./ *All authors have completed the Unified Competing Interest form at www.icmje.org/coi_disclosure.pdf (available on request from the corresponding author) and declare: no support from any organization for the submitted work; no financial relationships with any organizations that might have an interest in the submitted work in the previous 3 years; no other relationships or activities that could appear to have influenced the submitted work.*

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Sažetak

EPIDIDIMO-ORHITIS U 13-GODIŠNJEG DJEČAKA TIJEKOM VARICELLA INFEKCIJE - ULTRAZVUČNO PRAĆENJE

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Varicella je visoko zarazna infektivna bolest koja može uzrokovati brojne komplikacije. Jedna od rijedih, epididimo-orchitis, je samim time i rijetko opisana u literaturi, rijetko dijagnosticirana te neadekvatno liječena. U ovom prikazu opisan je slučaj 13-godišnjeg dječaka koji je inicijalno pregledan od strane infektologa i dječjeg kirurga pod dijagnozom skrotalne bakterijske superinfekcije tijekom varicella infekcije. Pogrešno liječen antibioticima, dječak je potom pregledan od strane pedijatrijskog endokrinologa, dijagnosticiran mu je epididimo-orchitis te je liječen acetaminofenom, hladnim oblozima i skrotalnom suspenzijom, s obzirom da je 24-satni 'prozor' za uključivanje antiviralne terapije već bio prošao. U laboratorijskim testovima nisu zabilježeni znakovi upale, a ultrazvučni pregled pokazao je uvećanje desnog testisa i epididimisa uz zadebljanje tunike albuginea i paratestikularni izljev. Pacijent je potom ultrazvučno praćen pri čemu je zabilježeno postupno poboljšanje uz potpuno normalan nalaz gonadu nakon infekcije. Hormonski status bio je uredan tokom praćenja. Nakon 5 godina napravljen je spermogram uz uredan broj spermija, ali i smanjenu mobilnost, te je pacijentu dijagnosticirana astenozoospermija. Na temelju ovog slučaja moramo naglasiti ulogu varicella infekcije u mogućem razvitku dugoročnih posljedica na reproduktivno zdravlje. S obzirom na smanjenu ulogu antiviralne terapije te još uvijek upitnu mogućnost prevencije komplikacija, moramo naglasiti važnost preventivnih mjera, uključujući cijepljenje, te pogled na razvitak novih antiviralnih metoda.

Ključne riječi: HUMANI HERPES VIRUS 3, EPIDIDIMITIS, ORHITIS, ULTRAZVUK

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