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VISION

To emerge as one of the premier pharmacy colleges in the country and produce pharmacy professional of global Standards.

MISSION

- To deliver quality academic programs in Pharmacy and empower the students to meet industrial standards.
- To build student community with high ethical standards to undertake R&D in thrust areas of national and international standards.
- To extend viable outreach programs for the health care need of the society.
- To develop industry institute interaction and foster entrepreneurial spirit among the gradutes

A RARE CASE REPORT ON SPLENOGONADAL FUSION

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Pharm D III rd year


INTRODUCTION:

The condition known as splenomeganadal fusion (SGF) is characterized by the presence of ectopic splenic tissue inside or close to a gonad. SGF is an uncommon condition that primarily affects males and newborns. Nonetheless, there are documented instances of SGF in newborn girls in the literature. The majority of the time, accidental diagnoses for Splenoglonadal Fusion includes inguinal hernia, cryptorchidism, epididymoorchitis, and testicular cancer. Other than a mass-like lesion on the testes that parents have seen and dull discomfort in older children, it does not present with any particular clinical manifestation.

Even though SGF is benign, patients undergo orchiectomy and post-operative pathological examination in order to obtain an accurate diagnosis. Therefore, neglecting such a differential diagnosis and skipping pre-operative investigations results in needless surgical intervention. Consequently, spreading knowledge on SGF as distinct

ETIOLOGY:

SGF is defined as a persistent, slowly growing testicular mass that is present from birth. Nevertheless, some research led to the development of the notion that splenic cells migrated to the left diaphragmatic ligament, resulting in right-sided SGF and cryptorchidism.There is currently no identified primary cause. Numerous ideas propose that fusion takes place around the fifth to eighth week of gestation, during which the splenic anlage and the gonadal ridge form an atypical connection.Regarding the proximity of the left dorsal mesogastrium and the left urogenital fold, the stomach rotates around its axis in the fifth week of gestational age, bringing the spleen and gonad tissues close together. At the same time, the surface of the genital ridge fused to the splenic outline.It is believed

CASE STUDY:

A three-year-old boy was referred to our surgical clinic with a painless left testicular mass and left inguinal hernia. Incidentally, his mother had detected the mass like lesion in the left scrotal sac during clothing. Regarding his past medical history, he was a healthy term baby with a previous history of bilateral undescended testes and went under orchiopexy during his first year of life. In his physical examination, a left side reducible inguinal hernia was detected. Also, an immobile lesion was found on the left testis. Regarding the ultrasonography, a solid immobile lesion of 10 ∗ 5 mm was detected on the left testis as well as reducible left inguinal hernia (Fig. 1). Tumor marker (AFP) was checked which was negative. Due to previous history of orchiopexy and suspicion of malignancy in the left testicular mass, after surgical exploration of the inguinal canal, open left inguinal repair and left orchiectomy were performed. Considering the pathological examination, macroscopically, an appendicular mass of 15∗ 5 mm was detected on the inferior pole of left testis(Fig:2). After dissection, the appendicular mass and majority of the testicular tissue was replaced by tissue macroscopically resembling features of splenic texture(Fig:3). Microscopically, sections from testicular mass showed the normal splenic tissue next to testicular tissue. Splenic tissue composed of red pulp and white pulp separated by marginal zone can be seen near the seminiferous tubules of normal testis tissue.

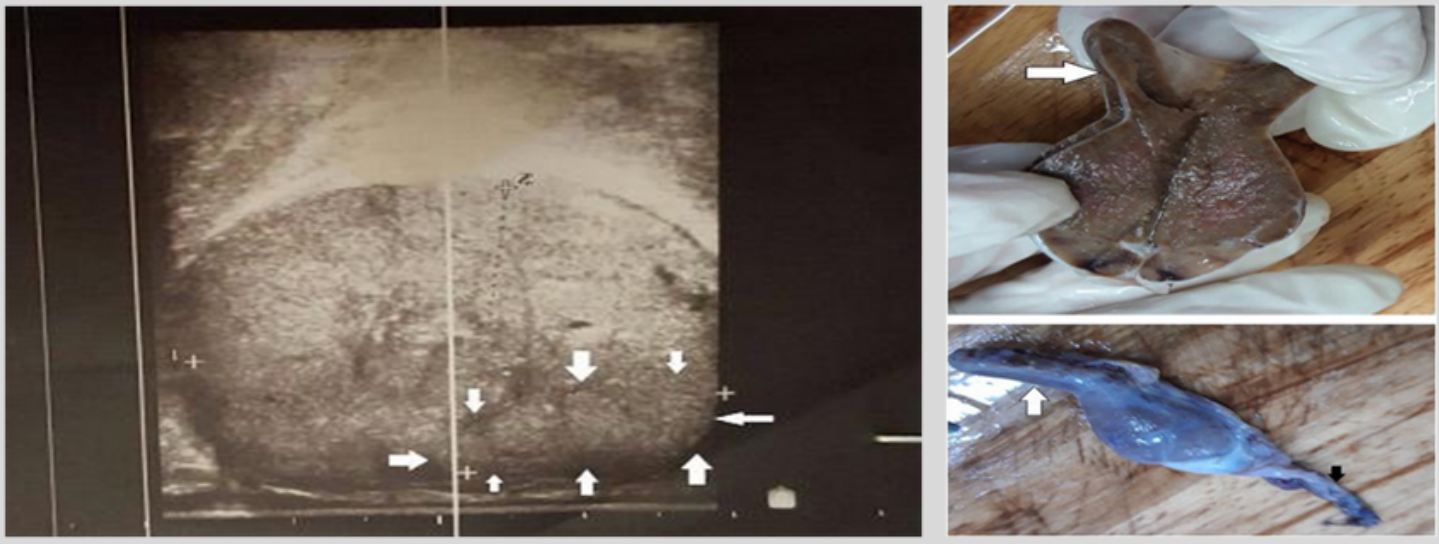


Figure 1, 2 and 3: Representation of splenogonadal fusion in patients

DIAGNOSIS:

Splenogonadal fusion is difficult to diagnose due to many differential diagnoses. Testis cancer is the most important differential diagnosis for SGF; nevertheless, no research has established a link between SGF and testis cancer. Pre-operative detection of SGF, particularly in discontinuous type, is therefore a first step toward avoiding needless orchiectomy. Consequently, para-clinical research is used. Differential diagnosis should be made using imaging investigations such as B-mode ultrasonography, computed tomography (CT), magnetic resonance imaging (MRI), and Technicium-99m sulfur colloid liver-spleen scan.

Some radiologists assert that it is possible to distinguish between normal testicular area and splenic tissue by comparing blood flow in the mass and the testis and detecting the splenic capsule. However, because SGF and testicular cancers share several characteristics, ultrasonographic imaging is not as helpful as one might anticipate.To detect ectopic splenic tissue in a CT scan, radiocolloid spleen scintigraphy (99mTc-sulfur colloid spleen-liver scan) may be helpful.

However, because ultrasonography is the primary method in pediatrics, it is rarely employed. It is also employed in cases of high suspicion for other congenital defects, such as ectopic splenic tissue in the scrotal area.

In addition, MRI typically rules out intra- and extrascrotal lesions in addition to other congenital abnormalities. Additionally, classifying testicular lesions and other anomalies can benefit from the use of various sequences and the administration of gadolinium. However, because MRIs require anesthesia, they are costly and time-consuming procedures that can be detrimental to infants.

Conversely, diagnostic laparoscopy is a very valid, comprehensive, and dependable procedure.

Additionally, it is strongly advised for improved assessment of testicular diseases and management of intra-abdominal and undescended testes.

TREATMENT:

Not only is there a lack of precise features for pre-operative diagnosis of SGF, but this particular case is so uncommon that it could be misdiagnosed and an unnecessary orchiectomy prevented. Only four SGF cases have been linked to testicular cancer, most likely as a result of cryptorchidism's increased risk of testicular malignancy. According to a 1990 report, about 37% of SGF patients had needless orchiectomies.

In addition to protecting the testis, full splenic excision is required upon diagnosis of SGF. Thus, it is imperative to avoid needless orchiectomy that could change a person's life. Two-stage laparoscopy is a further appropriate option to dangerous orchiopexy in order to prevent needless orchiectomy and allow for better evaluation.Surgeons must be aware of this misdiagnosis to prevent unnecessary orchiectomy and pathologists by the means of frozen section can be helpful in diagnosis.

CONCLUSION:

An uncommon congenital benign abnormality is called splenogonadal fusion. Testicular tumor or inguinal hernias are the rare diagnoses. Sonography and other pre-operative imaging are hardly ever diagnostic in these situations. Surgeons should be aware of SGF as a differential diagnosis when handling a pediatric testicular tumor in order to avoid performing an unneeded orchiectomy, even though SGF cases are uncommon.

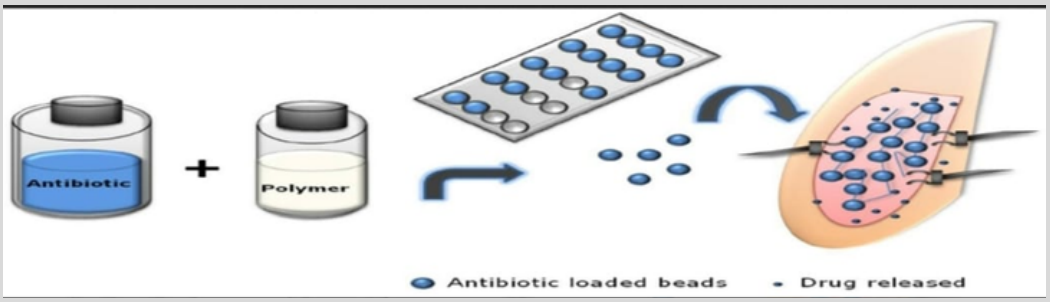
REFERENCE:

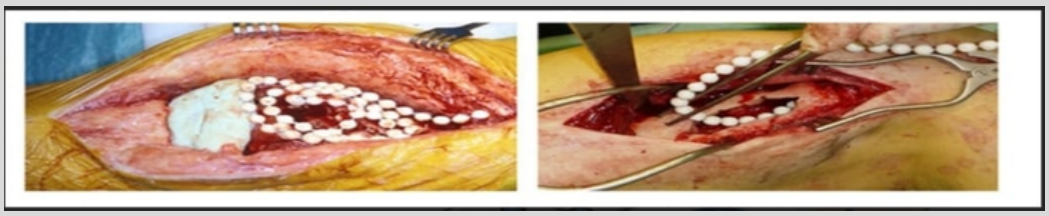
Salehi M, AbedianKenari F, Ghasemi M, Rehman S, Salehi M, Jafari HR. Splenogonadal fusion: A rare case report and literature review. Int J Surg Case Rep. 2023 Aug;109:108480.

Antibiotic bead treatment:

P.Dasthagiramma
Pharm D II nd year

- Implanted antibiotic beads are a form of microbiological treatment inserted during orthopedic procedures to aid with the treatment of chronic infection. They are also used as a local treatment for osteomyelitis.The beads are radiopaque , thus leading themselves to thus visualisation on all imaging modalities .[1]
- **Why antibiotic bead treatment is preferred and necessary?:** If there is chronic infection of bone,in addition there is low blood perfusion and rate low of flow of drug to the infected bone area,so to send the medicine directly into infected bone area and also for effective treatment ,the antibiotic bead treatment is used..The antibiotic used in the beads should provide seroma concentrations above the breakpoint sensitivities for 3 to 4weeks, have adequate granulation tissue and bone concentrations , and not produce toxic serum drug concentrations .The beads deliver a high local level of antibiotic with a decreased risk of toxic systemic levels.Currently, antibiotics used for bead delivery must be in powdered form with PMMA polymer and are selected to correspond to the sensitivities of the wound pathogens. [1,2]





- **How the antibiotic drugs are released from the Antibiotic bead preparation and how much time taken to release and to show the action of antibiotics:**
- Antibiotic-impregnated PMMAbeads have been used as a local drug delivery system for the treatment of bone and soft tissue infections.There was gradual release of tobramycin from the beads over the entire 21 days, but the release was most marked during the first 48 hours.These beads provide adequate Antibiotic bead levels for approximately 6-10weeks
- The process employs hydrophobic ion pairing to solubilize gentamycin in a solvent compatible with PLA, followed by precipitation with a compressed antisolvent . The resulting precipitate is a homogeneous dispersion of the ion-paired drug in PLA microspheres. The microspheres are approximately 1 μm in diameter and can be compressed into beads (3-6 mm in diameter) strung on surgical sutures for implantation. The bead strings exhibit no significant change in release kinetics upon sterilization with a hydrogen peroxide plasma . The kinetics of gentamycin release from the PLA beads are consistent with a matrixcontrolled diffusion mechanism. While PMMA beads initially release gentamycin in a similar manner, the drug release from PMMA ceases after 8 or 9 weeks, while the PLA beads continue to release drug for over 4 months. Moreover, only 10% of the gentamycin is released from the PMMA beads, while PLA beads release more than 60% of their load, if serum is present in the release medium. The PLA system displays improved release kinetics relative to PMMA, is biodegradable, is unaltered by gas sterilization, can be used for a range of antibiotics, and can be manipulated without disintegration. These are all desirable properties for an implantable drug delivery system for the prevention or treatment of osteomyelitis..
- **Where antibiotic bead are placed?:** High concentrations of antibiotics can be delivered through the use of polymethylmethacrylate (PMMA) impregnated beads placed locally within the infected bone or joint area without the parenteral therapy.[3]
- **Requirements for preparation of antibiotic beads:** PMMA is a non degradable material tha has been used in orthopaedic surgeries,is a widely accepted carrier material for this local antibiotics delivery and is able to exceed the required minimum inhibitory concentration (MIC),it is called antibiotic loaded bone cement (ALBC)[4]..Due to major advantages of PMMA ,calcium sulfate,polycaprolactone ,polylactide/polyglycolide ,chitosan ,calcium sulfate/calcium carbonate ,were extensively used as alternatives.Antibiotic-loaded PLA and PL:CG beads have the advantage of better antibiotic elution and the ability to biodegradable (thereby averting the need for secondary surgery for bead removal) compared to the PMMA beads presently used in the clinical setting.[5][6]
- **Mechanism of action of antibiotic beads:** Antibiotics commonly block biochemical pathways important for bacteria. Many bacteria make a cell wall to protect themselves. The antibiotic penicillin blocks the biochemical processes that build the cell wall. Consequently, the growing bacteria become unable to make cell walls and die easily.

- **Antibiotics used are:** Macrolides, beta lactum antibiotics,Clindamycin,Aminoglycosides,Quinolones, Vancomycin,Tobramycin, Erythromycin, Ciprofloxacin,Cephalosporins, Tetracycline,Rifampicin, Amoxicillin,piperacillin,carbapenems have good penetration into bones.Combination of antibiotic beads increass the therapeutic activity.
- **Antibiotic beads preparation:**To mix the cement powder with the antibiotic powder and to then add the prepackaged monomer. The components are mixed with a spatula in open air until a doughy viscosity is achieved. The resulting paste is placed into a plastic mold for beads with heavy nonabsorbable sutures. At the end of the polymerization, the suture is used to remove the beads from the plastic mold. Alternatively, the beads can be made by hand and placed on the suture manually. The sutures act as the string for the beads once dry. The strings of beads are then placed within the surgical wound for dead-space management and antibiotic delivery

How long time the antibiotic beads are placed in infected bone area?:

- The number of beads placed should be counted and documented in the operative report to ensure that the same number are removed at the time of surgical removal to prevent retention of foreign material.The average follow up was 35 weeks.(6months- 5years.)
- It remains unclear however whether retention of PMMA beads cause long-term adverse events if not removed. Although beads can continue to release antibiotics for months to decrease bacterial burden, they may also theoretically serve as a substratum for bacteria particularly after elution is complete.[7]

What are methods used to remove Antibiotics beads ?:

- Theguidewire technique permitted all of the beads in the intramedullary cavity of the tibia to be removed without bone fenestration or any other invasive procedure. The average time of the fluoroscopic guidance for the complete removal of the beads was 29.3 s (range 23–36 s). In one case, the chain of cement beads was removed and a new interlocking nail inserted at the time of their removal because of persistent non-union. Re-insertion of the cement-bead chain was necessary at 3 mo after the insertion of this nail because of a recurrence of intramedullary infection.

Indications:

- Includes prevention of infection(eg:open fracture antibiotic bead prophylaxis)
- Tx of bone infection(i.e acute and chronic osteomyelitis)
- Tx of infected joint arthroplasties,dead space management in patients with large soft tissue injuries and chronic infected non - unions.

CONTRAINDICATIONS:

- Tx of open fractures includes patient hypersensitive to specific antibiotics,small wounds (for which beads are not necessary) and unsalvageable limbs (because beads do not overcome massive tissue injuries.)
- Tx of osteomyelitis include patient hypersensitive to specific antibiotics and presence of resistant and slime forming organisms such as enterococcus[8].

Are there risks associated with Antibiotic bead treatment:

- Implanting antibiotic beads into infected bones causes a few minor concerns. However, no treatment is completely risk-free. Some physicians believe antibiotic bead treatment can lead to infection if implemented too quickly. Scheduling bead-removal surgery can help reduce the risk of infection.

Reference :

- Ferguson J., Diefenbeck M., McNally M. Ceramic Biocomposites as biodegradable antibiotic carriers in the treatment of bone infections. J Bone Jt Infect. 2017;2(1):38–51. doi: 10.7150/jbji.17234. [PMC free article] [PubMed] [CrossRef] [Google Scholar]
- Ramey W.L., von Glinski A., Jack A., Blecher R., Oskouian R.J., Chapman J.R. Antibiotic-impregnated polymethylmethacrylate strut graft as a treatment of spinal osteomyelitis: case series and description of novel technique. J Neurosurg Spine. May 8, 2020:1–6. doi: 10.3171/2020.3.SPINE191313. Published online. [PubMed] [CrossRef] [Google Scholar]

ZURZUVAE [ZURANALONE]THENEWLYAPPROVEDPILLFOR POSTPARTUMDEPRESSION

J.Hemalatha,M.Kushiya

Pharm D III rd year

Drug : Zurzuvae

Pronunciation : Zur-zoo-vay

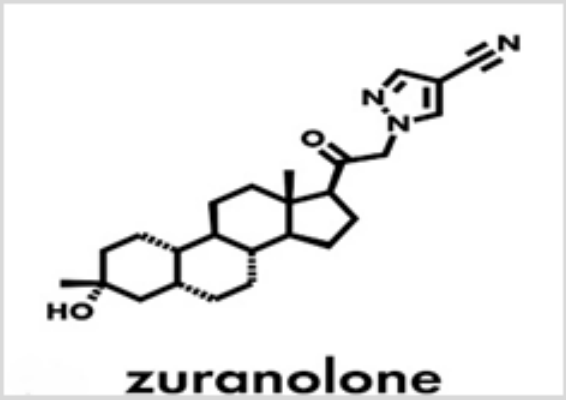
Generic name : Zuranalone

Class : NeuroactivesteroidGABA-A

Brand name : Zurzuvae

Molecularformula :C25H35N3O

Structure :



Dosage forms : Capsules - 20mg, 25mg and 30mg

Manufacturing Company: SAGE Therapeutics; US

Date ofapproval : 4AUG2023

Routeofadministration : Oral[capsules]

Indication: First oral medication indicated to treat post partum depression in adults once daily [OD] for 14 days that can provide rapid improvement in depression

Mechanism of action:

It is a neuroactive steroid Gamma-amino butyric acid [GABA] a positive modulator.

The mechanism of zuranalone in the treatment of post partum depression is not fully understood but it is thought to be related to its positive all osteric modulation of GABA-receptors

Activation of GABA –A receptor that which is Opening of central pore leads to Increase Influx of cl-ions through the pore causes Hyperpolarization of the neuronal membrane which reduces Occurrence of action potential leads to Inhibition of neuro transmission that portraits calmness of the patient

PHARMACOKINETICS :

Absorption: Absorbed through oral administration

Distribution: Distribution is greater than 500L the mean blood to plasma concentration ratio ranged from 0.54 to 0.58 plasma protein binding greater than 99.5%

Metabolism:

Zuranalone undergoes extensive metabolism with CYP3A4 identified as the primary enzyme.

Excretion:

45% dose recover in urine and 41% infaeces metabolites under changed <2% Zuranalone

Half life:

approx.19.7to 24.6

Apparent clearance: 33/L

Adverse drug reaction:

Sleepiness, Tiredness, Cold, Confusion, Dizziness, UTI, Diarrhea, Blurred vision, Stuffynose, Trouble walking.

Contraindications:

Hypersensitivity to drug, Caution of hepatic impairment, child –pugh classC, Patients <25 years are not fit to use

Drug interactions:

Concomitant use of Zurzuvae with CYP3A4 induces [erythromycin, rifampicin] decreases the exposure of Zurzuvae may reduce efficacy of drug

Precautions: Avoid driving and other potentially hazardous activities for at least 12 hrs after each dose.

References:

- https://womensmentalhealth.org/clinical-and-research programs/pregnancyregistry/antidepressants/
- https://www.rxlist.com/zurzuvae-drug.htm
- ZURZUVAE [ZURANALONE] THE NEWLY APPROVED PILL FOR POSTPARTUM (1).docx

Departmental Activities in August - 2023

PERFECT CLICKS

V CARE CAMPUS PLACEMENTS

NATIONAL SEMINAR ATTEND BY SHCP FACULTY AND STUDENTS @ GKCOP, SULLURPET

ALUMNI MEET

INDEPENDENCE DAY CELEBRATIONS

GUEST LECTURE ON BE PROUD OF YOUR MOUTH

NATIONAL SPORTS DAY

CULTURAL CLUB ACTIVITIES