

## Case report of a septic arthritis complicated with septic thrombophlebitis and septic pulmonary embolism in a child at the Regional Hospital of Buea, Cameroon

Cas d'une arthrite septique compliquée d'une thrombophlébite septique et d'une embolie pulmonaire septique chez un enfant à l'Hôpital Régional de Buea, Cameroun

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### Cas clinique

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### ABSTRACT

Septic or suppurative thrombophlebitis (ST) is a systemic disease condition characterized by micro abscess formation within the thrombotic veins and repeated bacterial embolization into the circulation. Septic Pulmonary Embolism (SPE), one of its most severe complications is the lodgement of an infected thrombus in a pulmonary artery. It has no clinical specific features. The authors hence report a case of an 8-year-old boy brought with an acute history fever, right knee and leg inflammation, ulcerated blisters discharging pus around the leg. The diagnoses of septic arthritis of right knee and thromboembolic disease were made. The venous Doppler ultrasound suggested the septic arthritis, while the thoracic CT-Angiogram a septic pulmonary embolism confirmed to be staphylococcal by blood culture. The patient was then put on probabilistic then specific antibiotic therapy. The progression was marked by an improvement of the symptoms after 29 days of treatment and the patient was discharged after 34 days of treatment with antibiotics. We note therefore that osteoarticular infections can be complicated by sepsis and septic pulmonary embolism.

### RESUME

La thrombophlébite suppurative est une maladie systémique caractérisée par la formation d'un micro-abcès dans les veines. L'embolie pulmonaire septique, l'une de ses complications les plus graves, est due à la présence d'un thrombus septique dans une artère pulmonaire. Les auteurs rapportent donc le cas d'un garçon de 8 ans amené pour la survenue de la fièvre, l'inflammation du genou droit et de la jambe droite, des vésicules ulcérées et suppurées au niveau de la jambe droite. Le diagnostic d'arthrite septique du genou droit compliquée d'embolie pulmonaire septique a été posé. L'échographie Doppler du genou, a confirmé l'arthrite septique, tandis que l'angio-scanner thoracique a révélé une embolie pulmonaire septique à germe de type staphylocoque retrouvé par l'hémoculture. Le patient a été mis sous antibiothérapie probabiliste puis spécifique. L'évolution a été marquée par une amélioration des symptômes après 29 jours de traitement et le patient est sorti de l'hôpital après 34 jours de traitement. L'intérêt est de mentionner que les infections ostéo-articulaires peuvent se compliquer de sepsis et d'embolie septique, maladies redoutables et handicapantes.

## Introduction

Septic or suppurative thrombophlebitis (ST) being a condition characterized by micro abscess formation within the thrombotic vein and repeated bacterial embolization into the circulation, is a serious systemic illness that has not been extensively covered in the literature because of its infrequency in clinical settings [1]. Septic pulmonary embolism (SPE) a more severe form of ST results from the lodgement in a pulmonary artery of an infected thrombus usually originating either in the venous circulation or in the right side of the heart [2]. The microorganism containing fibrins that are sourced from the primary focus of infection get into circulation and cause obstructions in the pulmonary arteries by forming nodular or cavitory lesions at the lung parenchyma terminal vessels [3]. A connection between septic thrombophlebitis and acute osteomyelitis in children is reported [4]. Septic pulmonary embolism being a rare condition originating from a primary focus of any infection and intravenous (IV) drug usage [3,5]. Its clinical features are generally nonspecific as clinical picture often suggests pneumonia and the diagnosis may not be established until autopsy [5–7]. The occurrence SPE is increasing with the degree of infectiousness, to use of indwelling catheters and devices as well as increasing numbers of immunocompromised patients. This is changing the epidemiology and clinical manifestations of the disease [5]. Septic thrombophlebitis represents a significant but frequently overlooked type of infectious complication. In this case we presented a child managed for septic pulmonary embolism in a child.

## Case presentation

Patient is an 8-year-old male with no known history of chronic disease, who presented to the paediatric consultation with an acute history right knee, leg swelling and pain, inability to bear weight of about 8 days duration in an afebrile context. During consultation the patient was in respiratory distress SaO<sub>2</sub>: 85%, with no signs of anaemia. Examination of the right lower limb revealed a swollen leg marked at the knee, ulcerated blisters discharging purulent substance on the leg and thigh (**figure 1**). The limb was warm to touch, tender with a positive Homan sign and the swelling at the knee was fluctuant. There was reduced range of motion in both active and passive movement of the affected limb. On the abdomen, there was a tender hepatomegaly and splenomegaly. and there were crackles on the right anterior basal lung field. The diagnostic of septic

arthritis of right knee complicated with pulmonary embolism.



**Figure 1:** limbs on the initial consultation

He was initially placed on broad spectrum antibiotic therapy with cloxacillin injectable at 150mg/kg in 3 divided doses, gentamycin at 3mg/kg in one dose, Enoxaparin (LMWH) 0.5mg/kg daily dose 12 hourly, paracetamol 60mg/kg in 4 divided doses, intravenous fluids, topical niflumic acid 2.5%, antiseptic and disinfectant (hexamidine and chlorhexidine) for topical use. The laboratory results were: D-dimer 2858 ng/dl, CRP= 48mg/l, previous 24mg/l, ESR= 132mmfall/hr., FBC: WBC= 11200 cell/mm<sup>3</sup>, Hb= 8.3 g/dl compared to 11.2 g/dl on admission, PLT= 119000 cells/mm<sup>3</sup>, Creatinine= 0.7 mg/dl, K+= 3.2 mmol/l, Na+= 123 mmol/l .

The X-ray of right leg showed signs of right distal tibia osteomyelitis (sequestrum, loss of bone density) (**figure 2**).



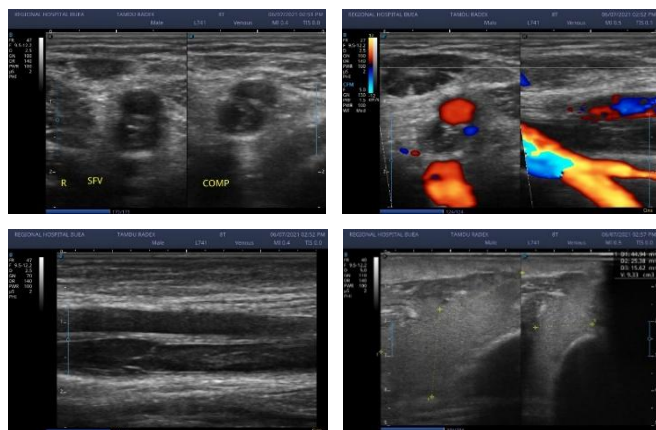
**Figure 2:** Right leg X-Ray: Osteomyelitis right distal tibia

The thoracic CT-Angiogram was in favour of a pulmonary embolism of septic origin (**figure 3**).



**Figure 3:** Thoracic CT-Angiogram

Döppler ultrasound confirmed did not show any deep venous thrombosis but suggested a right knee septic arthritis (**Figure 4**).

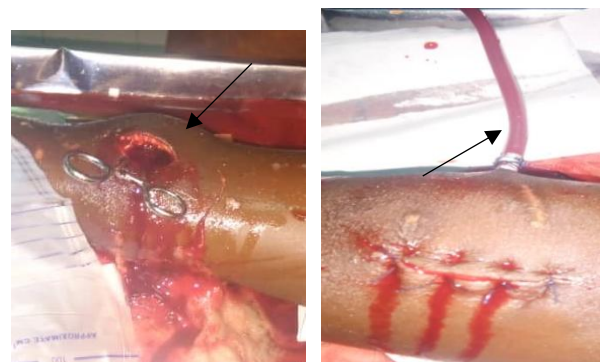


**Figure 4:** Color Döppler Ultrasound Scan

Blood culture isolated *Staphylococcus aureus* and sensitive to levofloxacin, amikacin, chloramphenicol. FBC on day 17 revealed a bicytopenia; anaemia Hb: 6 g/dL thrombocytopenia: PLT: 38000 cell/mm<sup>3</sup>

Right knee arthrotomy, and intra-articular drain placement were done on day two of admission. Post arthrotomy course was marked by the persistence of fever and peri-incisional pain. Systemic immune response syndrome (SIRS), drainage from the intra-articular draining system, right elbow inflammation and right lower lung consolidation syndrome and respiratory distress,

followed by tender hepatomegaly a day later. We concluded on a septicemia.



**Figure 5:** Right knee arthrotomy and Intra articular draining system

After reviewing the pulmonary CT-angiogram, we stopped the LMWH and continue the broad-spectrum antibiotic therapy and added oxygen.

Another day later we noticed a swelling on the chest which was tender and fluctuant; with persistence of all previous findings. We concluded right lower chest wall abscess which was drained under ultrasound guidance same day.

Following availability of pus culture results which isolated *Staphylococcus aureus* on day 6 post arthrotomy.

The antibiotics were adjusted to injectable chloramphenicol 75mg/kg in 3 divided doses and injectable amikacin 15mg/kg in 2 divided doses were added to all other modalities of treatment. Persistence of fever, somatalgia, and anorexia, SIRS, anaemia, generalized body tenderness, polyarthralgia, and abdominal distension on day 8 prompted an exploratory abdominal ultrasound which revealed peritoneal free fluid and 16 cc of the inflammatory fluid collected, amikacin was then switched to intravenous ofloxacin 30 mg/kg in 2 divided doses.

These symptoms persisted till day 15 post arthrotomy. The injectable chloramphenicol was relayed to oral ofloxacin 200 mg twice daily, tepid sponge if fever, FBC revealed a bi-cytopenia; severe anaemia and thrombocytopenia on day 17. He received 20 cc/kg of fresh whole blood for 4 hours, followed by systematic anti-malaria treatment with artesunate 2.4 mg/kg H0-H48 and relayed on Artemisinin-based Combination Therapy (ACT) for 3 days and continued the ongoing management.

Days 19 -29 were marked by persistent of SIRS and onset of cardiac tamponade for which an ultrasound guided pericardiocentesis done and left ankle abscess eruption (incision and drainage done).

On day 32, a FBC was control requested. He was found to have a microcytic hypochromic anaemia Hb 8.3 g/dL. oral iron and folic acid were added to the treatment.

On day 34, following resolution of symptoms he was discharged home on oral ofloxacin 200 mg twice daily, oral analgesia, oral iron and folic acid, antiseptics and was to report on outpatient basis for wound care, follow-up and physiotherapy.

## Discussion

SPE is a rare but grave disorder that is difficult to diagnose [5]. The symptoms were not specific, most manifested as bacteremia, dyspnea, chest pain, cough as well as symptoms of the extra pulmonary infective focus [6,8] similar to our cases where our patient who presented with systemic immune response syndrome, right elbow inflammation and right lower lung consolidation syndrome and respiratory distress. Though chest x-rays and blood cultures are mostly used for the diagnosis, we actually performed a pulmonary angio-scan which yield helpful clues that may suggest the diagnosis of a septic embolus, which was confirmed with a subsequent blood culture (*Staphylococcus aureus*) [5,8].

Most SPE are as a complication of, liver abscess, pneumonia, and tricuspid valve infective endocarditis were the major primary sources of SPE, and liver abscess was the most common primary source of SPE (40%) [9]. Some research suggests bony tissue infection as well [7]. In this case the primary focus was a knee septic arthritis obviously from staphylococci origin. Although we cannot exclude it being a nosocomial infection as well, we considered the fact that our patient is a child, and that *Staphylococcus aureus* in the commonness cause of septic arthritis in this age group. Also, in our context most parents start empirical antibiotics treatment when faced fever of any origin. This could explain the germ strain here was resistant to methicillin being the cause of the osteoarticular infection [10]. In case of the length of total therapy, with IV and then potentially postoperative antibiotics, should be on average of 2 to 3 weeks for *Staphylococcus sp* The duration of treatment should be more prolonged in the case of Methicillin Resistant *Staphylococcus aureus*. Generally, treatment is broad spectrum antibiotic therapy base targeting common germs until specific it determined [5]. Like in our case we isolated *Staphylococcus aureus* resistant to common antibiotics requiring chloramphenicol and amikacin to achieve optimal therapeutic outcome [6]. Anticoagulant was stopped in our case once the diagnosis of SPE was established in order to prevent bleeding at the foci of infect embolus [6,7].

## Conclusion

Osteoarticular infections can complicate and become as dreadful and handicapping just as meningitis. Septic embolism as in this case is a serious condition that is associated with high morbidity and could be fatal if missed.

**Conflict of interest:** The authors declare no conflict of interest for this publication.

## Author's contributions

Djike Puepi F. Y: received, consulted, and conceived the case report and supervised the write-up; Ngwane Ntongwetape: received, consulted, and conceived the case report and supervised the write-up; Dongmo S: performed all the imagine analysis for this case, Andang P: ensured patient follow-up during admission, gathered material and wrote the case; Yanelle Wandji Y: contributed in the management of the patient and edited the write-up; Noukeu D: contributed in the management of the patient and edited the write-up; Verla V: supervised the management and all activities relating to the write-up

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