

NEUROLOGICAL COMPLICATIONS IN PATIENTS WITH MULTIPLE SEPTIC DETERMINATIONS - CASE REPORT

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Abstract: The presented case is that of a 67 year-old patient, having febrile syndrome associated with neurological signs and laboratory manifestations leading initially to the PRN diagnosis (acute polyradiculoneuritis). Complex exploration and multidisciplinary approach to the case contributed to the diagnosis of certainty in a relatively short time and appropriate therapeutic approach. The peculiarity of the case is the cervical disc infection, possibly by blood, being caused by a distant outbreak with golden methicillin-resistant *Staphylococcus*, spinal abscesses usually having lumbar or thoracic location. Surgical approach has been tampered with posterior cervical laminectomy C2-C3, C3-C4, with posterior decompression of cervical spinal canal and discharge of previous epidural abscess. Postoperative evolution was slowly favourable, with improved motor deficit and neck pain, but it was influenced by immobilization complications.

INTRODUCTION

Medullary abscess is a relatively rare pathology with nonspecific neurological symptoms but with significant functional response and difficulty of early diagnosis. The spinal infection may be primary (1,2) (post-traumatic or post-lumbar puncture) or secondary, adjacent to a nearby infection that extends itself (spondylo disc) or metastatic, by distant hematogenous propagation from a primary outbreak. *Staphylococcus* is the pathogen most often involved in the etiology of spinal abscess (3,4) and hematogenous dissemination is the main mechanism (5,6) most often identifying the primary infection source.(7) Neurological manifestations of spinal abscess depend on its location.(8) In addition to motor deficit (tetra paresis / paraparesis), sensory disturbance may occur, as well as sphincter disturbances, forming a clinical picture common to several spinal disorders. Thorough anamnesis, combined with paraclinical laboratory and high-performance imaging (MRI) underlie positive diagnosis. The treatment is complex, the targeted antibiotic having been tested in point of sensitivity and in accordance with drug-susceptibility testing (DST), as well as surgical, referring to the evacuation of the abscess and spinal canal decompression, followed by rehabilitation treatment of motor deficits.

CASE REPORT

M.D., a 67 year-old patient, is brought to the Emergency Room of the Central University Military Emergency Hospital, due to altered general health with cervical-occipital pain, fever, paretic limb motor deficit, gait disturbance, urinary disorders for 4-5 days, progressively worsened. From history we retain acute upper respiratory tract infection started 3 weeks ago and orthopedic osteosynthesis surgery of traumatic fracture of right humerus and femur nine months ago.

Neurological examination reveals a debilitated patient, neck stiffness, low grade fever, slightly asymmetrical tetraparesis with predominance deficit in the upper limbs, the right side being more affected than the left one, with MF (muscular force) 3/5 in lower limbs and 2/5 in upper limbs and

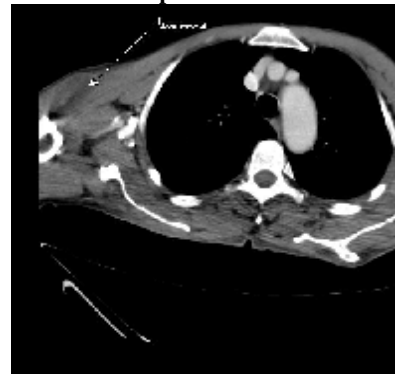
bladder globe. Biological samples indicate blood neutrophilia with lymphopenia, intense biological inflammatory syndrome with fibrinogen, ESR (erythrocyte sedimentation rate), CRP (C-reactive protein) greatly increased. Brain CT scan (CT) on admission does not indicate any brain damage.

Given the prolonged febrile syndrome associated with meningeal syndrome in the absence of brain lesions on CT, there arise suspicions of meningo-encephalitis and consult of infectious diseases is required.

The lumbar puncture with cerebrospinal fluid (CSF) exam is performed (cerebrospinal fluid): normal cellularity, slightly increased spinal protein, low spinal glucose, Pandy reaction +++. Given the occurrence of CSF with protein-cytological dissociation, there arises suspicion of acute PRN (polyradiculoneuritis) and the patient is hospitalized in the Department of Neurology for further investigations, specification of diagnosis and treatment. Investigation proceeds to identify infectious outbreak.

The tomography of the thorax and native abdominal-pelvic and with contrast shows a minimal bilateral pleurisy, degenerative spine disorders, abscess under the major right pectoralis muscle and in psoas muscle and in the left iliopsoas.

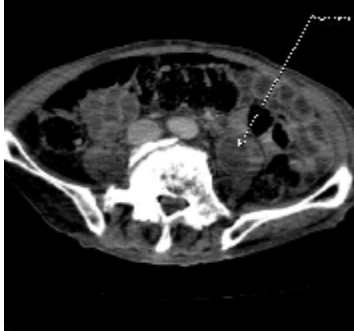
Figure no. 1. Thorax CT: pectoral abscess



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Figure no. 2. Abdominal-pelvic CT: iliopsoas muscle abscess



ENG site (electroneurographic) confirms the diagnosis of acute axonal polyradiculoneuritis. Investigations were conducted to establish the etiology of acute PRN.

Thus, we discussed the possibility of system diseases (SEL, systemic erythematosus lupus) given Ds anti-DNA Ac (double-stranded DNA antacid antibodies) originally bred, that is bilateral pleurisy. Normal values of Ds anti-DNA Ac after repeating the sample, the absence of ANA (antinuclear antibody) and the absence of urinary protein, exclude the diagnosis of SEL. Cardiologic consult excludes echocardiographic pathological changes specific to Libmann Sacks endocarditis.

Biological samples were collected for specific infections (Venereal Disease Research Laboratory (VDRL), human immunodeficiency virus - HIV) that were negative, as well as markers for TB infection (tuberculosis), given low spinal glucose also with negative result. In order to exclude a paraneoplastic syndrome, tumour markers have been determined as normal.

Lumbar puncture was repeated while evolving, thus highlighting clear CSF, normotensive, with normal cellularity, maintaining low spinal glucose and high spinal protein whereas bacterial, viral PCR cultures for KB (Koch bacillus) and latex for CSF fungi were negative.

Figure no. 3. Cervical MRI, T2 sequence anterior cervical epidural abscess

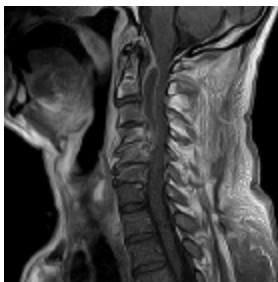
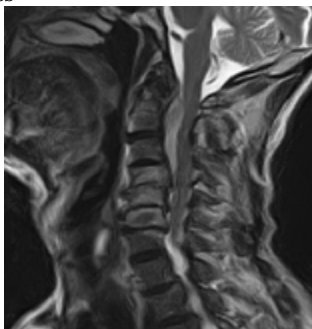


Figure no. 4. Cervical MRI, T1 sequence anterior cervical epidural abscess



Repeated blood cultures were performed in order to identify the pathogen. Two weeks after hospitalization, blood culture revealed golden methicillin-resistant Staphylococcus.

In order to exclude spinal pathology at cervical level and encephalitis it was performed MRI (magnetic resonance imaging) cervical and cerebral, native and with contrast which objectified the presence of intracanalary extradural fusiform collections which spans from C1-C5 and captures the contrast peripherally, causing spinal cord compression, thus pushing it towards the rear, which seems to have a starting point at C4-C5 space, linking disco-vertebral inflammatory changes at this level without brain damage.

Figure no. 5. Cervical MRI, T1 sequence with contrast - anterior cervical epidural abscess

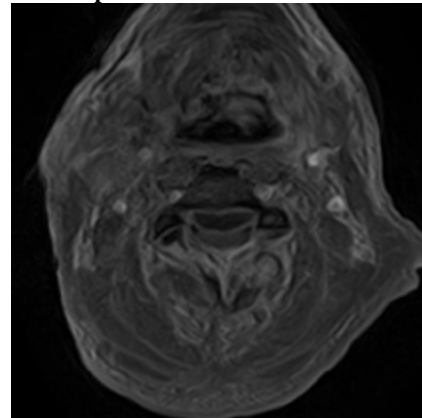
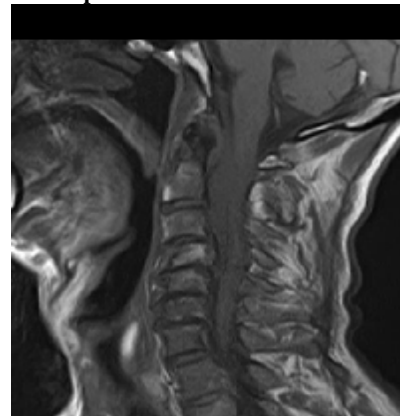


Figure no. 6. Cervical MRI, T1 sequence with contrast - anterior cervical epidural abscess



Ever since admission, the patient has received broad-spectrum antibiotics, steroidal anti-inflammatory treatment, B group vitamins, painkillers and anti-pyretic. The evolution has been fluctuating, slowly unfavourable, with persistence of fever, while maintaining high thermal values, which proved to be refractory to symptomatic treatment, aggravation of motor deficit with FM 2/5 in upper and lower limbs, maintaining meningeal syndrome, but reducing neck pain.

Given the changes in imaging (thoracic-abdominal CT, cervical MRI) general surgery, thoracic surgery and neurosurgery consultation are required.

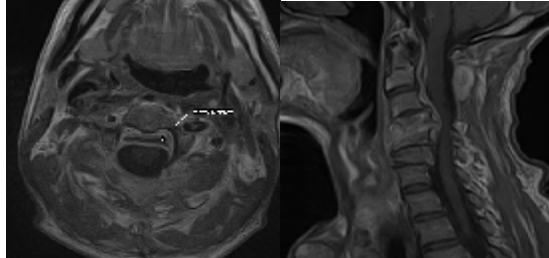
Surgical examination recommends timing the abscess evacuation from the pectoral and iliopsoas muscles. The presence of medullary abscess and the aggravation of neurological acts require patient transfer in the neurosurgery department for specific treatment. Surgical intervention is performed by posterior cervical approach with C2-C3, C3-C4

CLINICAL ASPECTS

laminectomy, with posterior decompression of cervical spinal canal and evacuation of anterior epidural abscess.

Postoperative MRI control shows complete drainage of epidural abscess, as well as the occurrence of changes in vertebral statics that cause cervical canal stenosis due to the inflammatory infectious process that generated this abscess.

Figure no. 7. Cervical MRI, T1 sequence with postoperative contrast - evacuated anterior cervical epidural abscess



The postoperative evolution was slowly favourable, improving motor deficit and neck pain but being influenced by immobilization complications, with the occurrence of trophic disorders (muscular atrophy, decubitus lesions with resistant germs) that have slowed the recovery of the patient.

DISCUSSIONS

The case presented is of a patient with febrile syndrome associated with neurological signs and laboratory manifestations leading to the initial diagnosis of acute PRN. Complex investigation and multidisciplinary approach to the case helped to establish the correct diagnosis and appropriate treatment approach.

The peculiarity of the case is the disc infection, possibly by blood, being caused by a distant outbreak (orthopedic surgery) with an aggressive germ (golden methicillin-resistant *Staphylococcus*). This caused the spinal abscess and multiple muscle releases.

Neck location is also particular, and usually inflammation of intervertebral disc and spinal abscesses has lumbar or thoracic location. This location sometimes puts in difficulty clinical differentiation between a syndrome of incomplete spinal cord compression and polyradiculoneuritis.

Note the short time from the occurrence of symptoms to positive diagnosis, although initially it was considered the motor deficit as being caused by acute axonal PRN confirmed by electromyography.

The increased interval from the orthopedic surgery (possible cause of disc infection) and the onset of symptoms makes it difficult to establish a causal relationship between them. The absence of spine surgery, the presence of staphylococci in repeated blood cultures, also identified in spinal abscess, support the etiologic diagnosis.

Note the choice of surgical management. It is generally performed at anterior cervical level. In our case, posterior cervical approach was performed with posterior release of cervical spinal cord and abscess discharge (which could not be achieved by anterior approach), the surgical purpose being primarily the spinal decompression.

CONCLUSIONS

1. Any paretic neurological deficit in the limbs (paraparesis or tetraparesis) should be fully evaluated in terms of both peripheral and central etiology. Medullary and perimedullary pain is often involved in such deficiencies, whereas infectious etiology (local or distant) alongside with the traumatic one overtakes all the others.

2. Medullary abscess, spondylosis and inflammation of intervertebral disc are diagnostic and therapeutic emergencies, the prognosis of the patients being influenced by antibiotic precocity and spinal decompression.
3. Positive diagnosis is difficult, MRI being the optional investigation for highlighting structural lesion, whereas bacteriological evaluation is crucial in identifying infectious etiology and establishing the effective treatment.
4. The frequency of disc infections and complications is constantly increasing due, on the one hand to the increase in the frequency of spine surgery or distant surgery, and on the other hand, to the increase in the risk of infection with resistant germs in elderly or immune deficient patients.

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