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Double cerebral abscess with Stenotrophomonas Maltophilia secondary to pulmonary abscess and with septic sigmoid sinus and jugular vein thrombosis

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ABSTRACT

The patient, 35 years old, left-handed, admitted for mixed aphasia, left hemiparesis, temporal-spatial disorientation, later stupor, symptoms appeared for about 24 hours and progressively intensified. Cranial CT scan with contrast and lung with contrast revealed 2 brain abscesses, one large frontal abscess on the right (54/51/47 mm) extended subcortically to the wall of the lateral ventricle and right parietal (32/26/22 mm). Right mediobasal corticalized lung abscess 47/51/28 mm. Toraco-pulmonary CT scan revealed millimetric pulmonary microlesions (some calcified), predominantly in the right upper lobe and a right parietal abscess 47/51/28 mm. The patient underwent emergency surgery (Right frontal craniotomy, subtotal excision of the abscess under magnification, right parietal craniotomy, excision of the abscess under magnification). Along with the surgical treatment, antibiotic treatment was administered according to the antibiogram administered iv and in aerosols, neurotropics, Vitamins B1, B6, anticoagulant treatment for venous thrombosis.

Keywords
brain abscess,
stenotrophomonas maltophilia

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INTRODUCTION

Stenotrophomonas maltophilia, , is an aerobic, Gram-negative, multi-drug resistant germ 1. Most often, Stenotrophomonas maltophilia grows in drinking water, presenting an increased risk of infection. Most patients with infections caused by Stenotrophomonas maltophilia are patients with comorbidities, such as neoplasms, chronic lung diseases[1].

Treatment of respiratory infections caused by Stenotrophomonas maltophilia is very difficult, both because of the intrinsic resistance of this germ to a large number of antibiotics and its ability to develop resistance during antibiotic treatment.

Brain abscess is a severe intracranial infectious disease that has a prevalence of 0.4–0.9 per 100,000 population (Nicolosi et al., 1991)[4].

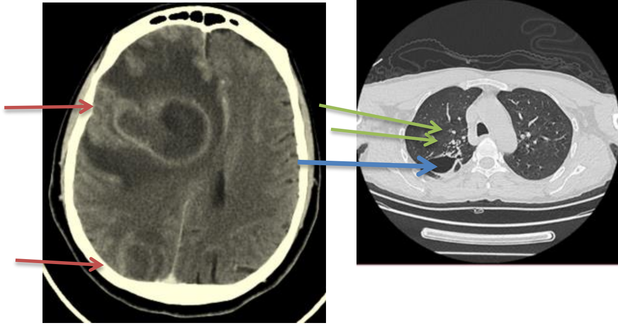

Figure 1. Cranial CT scan with contrast. Right frontal (54/51/47 mm) compressive on the lateral ventricle (subfalcorial herniation) and parietal abscess (32/26/22 mm) (Red arrows).

Figure 2. Thoracal CT scan with contrast. Right Parietal abscess 47/51/28 mm posibil bacilar(Blue arrow). Micronodules (some of them calcified) of bacilar etiology- ancient infection green arrows.

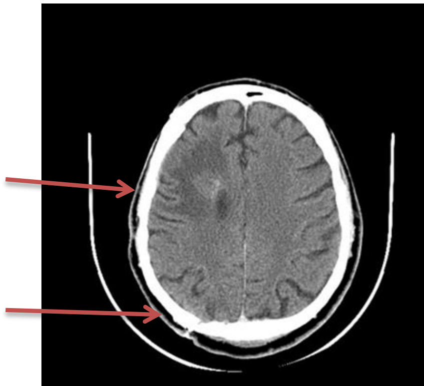

Figure 3. Subtotal excision of massive frontal abscess. Total excision under magnification of occipital abscess (red arrows)

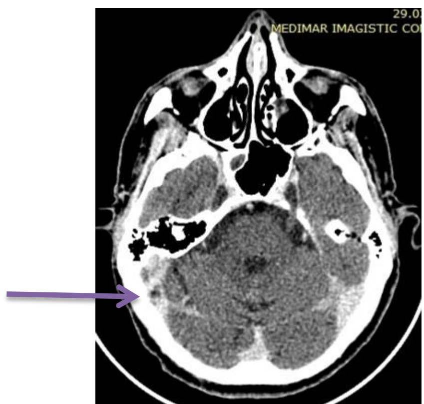

Figure 4. Thrombosis of the right sigmoid sinus (mauve arrow)

Case report

Patient, 35 years old, left-handed, was urgently admited in our unit for mixed aphasia, left hemiparesis (ASIA 2/5), stupor (GCS 11), temporospatial disorientation.

The patient was known to have type 2 diabetes for which he followed the regimen indicated by the diabetologist.

Cranial CT scan with contrast and lung with contrast revealed 2 brain abscesses, one large frontal abscess on the right (54/51/47 mm) extended subcortically to the wall of the lateral ventricle and right parietal (32/26/22 mm). Right mediobasal corticalized lung abscess 47/51/28 mm. Toraco-pulmonary CT scan revealed millimetric pulmonary microlesions (some calcified), predominantly in the right upper lobe and a right parietal abscess 47/51/28 mm.

The patient underwent emergency surgery (Right frontal craniotomy, subtotal excision of the abscess under magnification, right parietal craniotomy, excision of the abscess under magnification). The deep part, about 4-5 mm, glued to the side wall of the frontal sinus was left untouched to prevent the installation of a ventriculitis.

Empiric antibiotic treatment followed initially with Ceftamil 2 g every 8 hours, Vancomycin 1 ampoule 2 times/day, Metronidazole 500 mg vials 3 times/day for 3 days. Bacteriological examination revealed Stenotrophomonas maltophilia sensitive to Bseptol. In accordance with the antibiogram, the patient was administered Biseptol 2 tb every 12 hours during the hospitalization (3 weeks)and another 6 weeks later, at home.

The patient neurologic and clinical status was good : normal status of conscience, disapearance of the left hemiparesis.

Vitamin B1 and B6 2 tablets each, Cerebrolizin 30 ml/day iv, Spirulina, and Molekin immuno 1 tb/day were also administered.

The patient was diagnosed with thrombosis of the right sigmoid sinus and right internal jugular vein, which required anticoagulant treatment (Heparin sodium 4 weeks)

The Gold Quantiferon TB test was negative. The pulmonologist did not recommend antituberculosis treatment.

The patient was monitored for 2 years with a very good evolution.

Discussions

Brain abscesses pose a challenge in diagnosis and treatment, because microbiological diagnosis is not

always achieved, antibiotic drugs may not penetrate well into the CNS and some bacteria have resistances to typical empirical antibiotic drugs[7]. Bacteria with biofilm properties and a problematic resistance spectrum like Stenotrophomonas maltophilia should be included in the differential diagnosis, because they will not respond to the typical empirical treatment[7].

S. Maltophilia is intrinsically drug resistant to an array of different antibiotics and uses a broad arsenal to protect itself against antimicrobials[8]. The World Health Organization currently lists Stenotrophomonas maltophilia as an important Gram-negative multidrug-resistant bacterial pathogen in hospitals (https://www.who.int/drugresistance/AMR_Importance/en/). Infections by this environmental and opportunistic intrinsically drug-resistant organism are of significant concern among the immunocompromised patient population and can be fatal[8]. S. maltophilia was one of the top six pathogens isolated from pneumonia patients in U.S. intensive care units (ICUs) during 2015 to 2017[8] . Its common sources of infection include otogenous, odontogenic, cardiogenic, post-traumatic, haematogenous or secondary-to-pulmonary infections, urinary tract infections, intracranial and meningeal lesions, and skull osteomyelitis[5].

At this case I realised a subtotal microsurgical excission of the large frontal abscess to avoid a risc of ventriculitis. I left a small area of capsule stuck to the wall of the lateral ventricle in order to avoid having to open the ventricle. (Total excision of the abscess extending from the cortical surface to the lateral ventricle led to ventriculitis[2]).

The patient's hospitalization was prolonged due to the presence of a lung abscess that was not operated on by the thoracic surgeon and was not treated by pneumologist and the presence of septic thrombosis of the sigmoid venous sinus and the right jugular vein. I treated the patient with anticoagulants, (without reaching the effective anticoagulant dose (INR 2) so as not to induce an increased intracranial hemorrhagic risk) with effective oral hydration (minimum 2 l/day fluids) and intravenous solution (Ringer and Glucose 10% 2000 ml/day).

Conclusions

When a patient develops the classical triad of fever, headache, and focal neurologic deficits, the possibility of brain abscess should be investigated.

Early diagnosis and antibiotic treatment are mandatory to minimize various complications and the number of deaths and to offer the chance of healing.

The anticoagulant treatment induced by the presence of septic thrombosis of the sigmoid sinus and internal jugular vein was performed below the limit of the effective dose (without reaching the INR of 2-to prevent intracranial hemorhage) but hidrating the patient appropriately (minimum 2 l/day oral fluids, respectively 2 l/day intravenous solutions.

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