

# Pituitary Adenoma Complicated by Acute Bacterial Meningitis in a Patient in Kara (Togo)

Lihanimo Djalogue<sup>1\*</sup>, Leleng Agba<sup>2</sup>, Komi Edem Mossi<sup>3</sup>, Toyi Tchamdja<sup>1</sup>,  
Kodjo Agbeko Djadou<sup>3</sup>, Abago Balaka<sup>4</sup>, Mohaman Awalou Djibril<sup>3</sup>

<sup>1</sup>Internal Medicine Department of Kara University Hospital, University of Kara, Kara, Togo

<sup>2</sup>Neurology Department of Kara University Hospital, University of Kara, Kara, Togo

<sup>3</sup>Internal Medicine Department of Sylvanus Olympio University Hospital, University of Lomé, Lomé, Togo

<sup>4</sup>Internal Medicine Department of Campus University Hospital, University of Lomé, Lomé, Togo

Email: \*djalogueprisca@yahoo.fr

**How to cite this paper:** Djalogue, L., Agba, L., Mossi, K.E., Tchamdja, T., Djadou, K.A., Balaka, A. and Djibril, M.A. (2023) Pituitary Adenoma Complicated by Acute Bacterial Meningitis in a Patient in Kara (Togo). *Open Journal of Internal Medicine*, 13, 364-370.

<https://doi.org/10.4236/ojim.2023.134032>

**Received:** September 3, 2023

**Accepted:** November 24, 2023

**Published:** November 27, 2023

Copyright © 2023 by author(s) and Scientific Research Publishing Inc. This work is licensed under the Creative Commons Attribution International License (CC BY 4.0).

<http://creativecommons.org/licenses/by/4.0/>



Open Access

## Abstract

**Introduction:** In the context of pituitary adenoma, bacterial meningitis is a possible complication of surgical or medical treatment. The occurrence of meningitis before any treatment is exceptional, explained by the existence of an osteomeningeal breach caused by the adenoma whose main symptom is rhinorrhea. **Case Report:** We report a case of bacterial meningitis complicating a prolactin pituitary macroadenoma. The patient had been referred for jet vomiting in a febrile context preceded by headaches and visual blurring. There was no rhinorrhea. The examination revealed a meningeal syndrome and the diagnosis of acute bacterial meningitis was made. The isolated germ was the pneumococcus. Faced with headaches and visual blurring, a cerebral scan revealed a pituitary macroadenoma and pituitary hormone dosage had shown hyperprolactinemia. The meningitis was sterilized and the prolactinoma was treated with dopaminergic agonists. This allowed the normalization of prolactinemia and the disappearance of symptoms. **Conclusion:** The pituitary adenoma was complicated by bacterial meningitis without treatment and the presence of a meningeal breach. Hormonal and bacterial treatments have been successful.

## Keywords

Pituitary Adenoma, Prolactin, Meningitis

## 1. Introduction

Prolactin adenomas or prolactinomas are the most common pituitary adenomas and clinically which are less common in men than in women [1]. The prevalence

and incidence of prolactinomas are approximately 50 per 100,000 and 3 to 5 new cases/100,000 per year. Prolactinomas in men are larger and more invasive, leading to complications related to the size of the tumor [2]. Medical treatment with dopaminergic antagonists is the first-line treatment because of its remarkable efficiency [3]. Dopamine agonists are effective in about 80% to 90% of patients with prolactinomas, resulting in reduced serum prolactin levels and tumor size [4]. However, surgery can be used in certain situations, namely in patients who do not respond to medical treatment or when there is a large leak of cerebrospinal fluid to the point where surgical repair of the dural defect is essential [5].

In pituitary adenoma, bacterial meningitis is a possible complication of surgical treatment or medical treatment. Meningitis before any treatment is most often exceptional, due to the existence of an osteomeningeal breach caused by the adenoma [6]. Indeed, meningitis in a patient with an invasive pituitary macroadenoma is usually due to infection of the cerebrospinal fluid draining through the ruptured skull bone into the sphenoid sinus, allowing entry of nasopharyngeal organisms [7] [8].

In the literature review, we were able to note that pituitary adenoma despite the fact that more and more cases are diagnosed, is still rare. In sub-Saharan Africa, where the technical platform is sometimes insufficient for diagnosis, there are fewer cases. In Togo, Kpélao E *et al.* [9] were reported 2 cases, one case of gonadotropic adenoma and one case of non-secreting adenoma. In Kara, we did not find any study on pituitary adenomas. Moreover in our practice, this is the first case we have observed and it has seemed appropriate to us to report this case of bacterial meningitis complicating a prolactin pituitary macroadenoma in a patient in Kara (Togo).

## 2. Observation

This is a 39-year-old patient with no history, referred from a medico-social center for intense headaches of progressive onset, diffuse and resistant to the usual analgesics and visual blurring evolving for approximately three (03) months associated 24 hours before his admission with vomiting of food in a jet without effort and fever. In addition to the previous symptoms, there was added vertigo, deterioration in general condition (anorexia, weight loss and asthenia) and high blood pressure figures.

The physical examination noted a good state of consciousness, an alteration of the general state, a high fever at 40°C and a high blood pressure at 160/80mmHg in the 02 arms. There was also a meningeal irritation syndrome (frank neck stiffness, positive Kernig's and Brudzinski's signs), and ICHS syndrome (headaches, vomiting, visual disturbance).

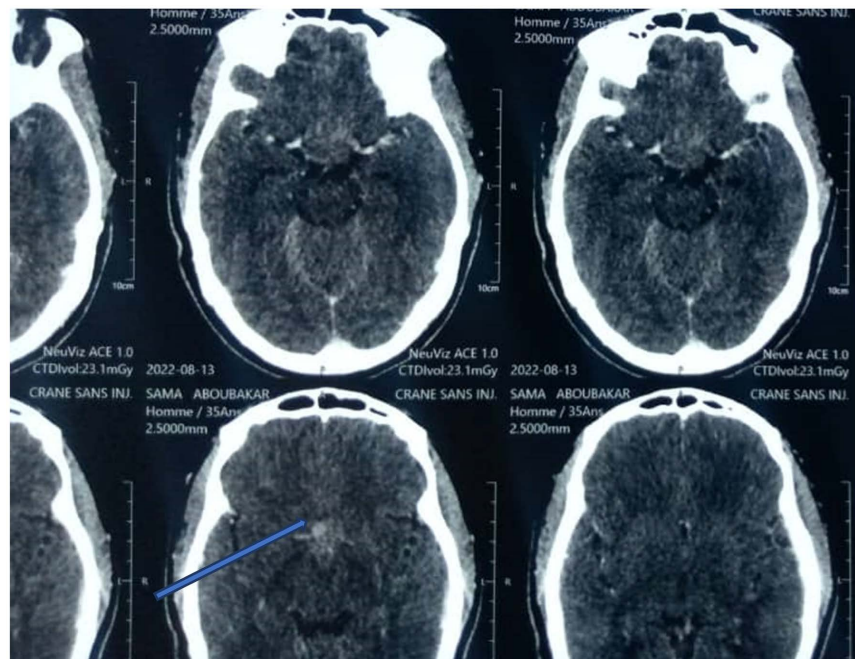
The lumbar puncture had brought back hypertensive and cloudy cerebrospinal fluid (CSF) with a rice-water appearance with, in its cytological study, 7000 white blood cells/mm<sup>3</sup>, predominantly polynuclear neutrophils (85%). Direct examination revealed a gram-positive diplococcus. The chemical examination had noted hyperproteinorachia at 1.89 g/l and hypoglycorachia at 0.72 g/l. The bac-

terial culture had objectified the presence of pneumococcus. The C-reactive protein (CRP) was high at 250 mg/l and in the blood there was hyperleukocytosis at 13,300 GB/mm<sup>3</sup> with polymorphonuclear neutrophils at 9600 PN/mm<sup>3</sup>. Faced with this picture of purulent meningitis, the patient was treated with a 3rd generation cephalosporin (Ceftriaxone) at a dose of 4 g per day in 2 IVL doses and oral corticosteroid therapy (Prednisolone 1 mg/kg/day). Faced with the ICHS syndrome, a cerebral CT scan showed an endo and suprasellar pituitary macroadenoma associated with an inflammatory process in the left bilateral and frontal ethmoid-sphenoid-maxillary sinuses without signs suggesting subarachnoid hemorrhage (**Figure 1, Figure 2**).

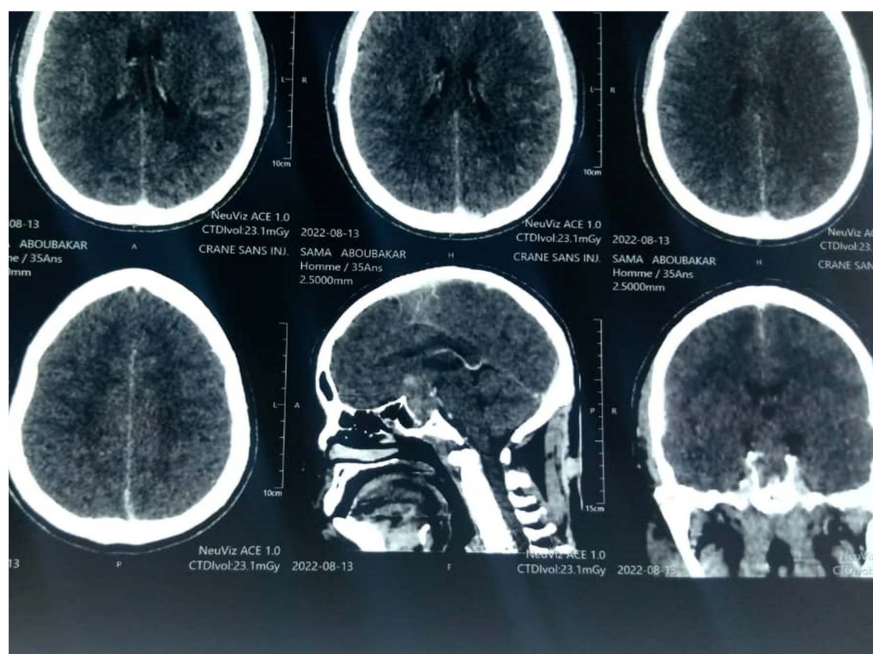
A hormonal assessment showed hyperprolactinemia at 455 ng/l. The diagnosis retained was that of acute bacterial meningitis complicating a prolactin pituitary adenoma. Hormonal treatment based on Bromocriptine 15 mg/d was initiated. The patient's condition improved gradually under treatment with the complete disappearance of the meningeal syndrome and other signs. The patient's condition improved gradually under treatment with the complete disappearance of the meningeal syndrome and others signs, and also an improvement of the biological inflammatory syndrome (CRP at 19 mg/l and White bloodcells at 8500 elements/mm<sup>3</sup>). Prolactinemia fell from 455 to 20 ng/l with a 12-month follow-up.

### 3. Discussion

The incidence or prevalence of pituitary adenomas has been the subject of several assessments and at present the data remain conflicting [10]. Fontana *et al.* [10] reported a prevalence of 1/1241 or 0.80‰. In Mali, Bah *et al.* [11] had found



**Figure 1.** Cerebral CT without injection of contrast product in axial reconstructions showing an pituitary macroadenoma intra and supra sellar compressing the optic chiasma.



**Figure 2.** Cerebral CT without injection of contrast product in sagittal reconstructions and showing an intra and supra sellar tissue process compressing the optic chiasm.

over 3 years a similar result like Fontana *et al.* [10], it was 18 cases out of 24,161 patients seen 0.75‰. Our observation reports a case of prolactin-secreting pituitary adenoma. Fontana *et al.* [10] and Abodo *et al.* [12] had reported 56% and 60.50% prolactinomas respectively. Pituitary adenomas are benign tumors classified according to their secretion into two subtypes: secreting or functional, and non-secreting or non-functional, and pathologically according to their hormonal expression into five immunocytochemical subtypes (prolactin [PRL], growth hormone [GH], thyroid stimulating hormone [TSH], adrenocorticotrophic hormone [ACTH], follicle-stimulating hormone-luteinizing hormone [FSH-LH]) [13]. Prolactinomas are the most common type of secretory pituitary tumors. Generally benign, they are classified according to their size; Micro adenomas are less than 10 mm in size and macro adenomas are 10 mm or larger [14] [15]. There are also mixed (association of two secreting hormone) pituitary adenomas described by some authors [9] [12] [16] [17] [18]. Unlike women, who typically have microadenomas, most men have macroadenomas, which would likely be related to delayed diagnosis although there may be sex-specific differences in the biological characteristics of tumors [13] [14]. Several authors have reported the macroadenoma in an adult male [5] [18] [19] [20] [21]. Our patient's age was 39 years old. The peak incidence of pituitary adenomas occurs in men between the ages of 35 and 60 [10]. In the literature the age was variable, but the majority was in the range of 35 and 60 [5] [18] [19] [20]. In our patient, the clinical manifestations that were at the forefront of the clinical picture were intense intractable headaches, visual blurring, and jet vomiting in a febrile context.

The most common clinical manifestations of pituitary macroadenomas are

endocrine and/or tumor disorders (headaches and loss of vision found in our patient) Margani *et al.* [5] and N'diaye *et al.* [16] also reported headaches and blurred vision. More rarely, when a macroadenoma grows towards the base of the skull, it can gradually erode the floor of the saddle and the sphenoid sinus, leading to leakage of cerebrospinal fluid (CSF) causing infection such as meningitis [22]. If aseptic meningitis has often been associated with pituitary adenomas in the context of pituitary apoplexy [23] [24], microbial meningitis without rhinorrhea has rarely been reported as a mode of revelation of pituitary adenomas as is the case in our study. To our knowledge, several isolated cases of pituitary adenoma complicated by bacterial meningitis have been reported [5] [6] [8] [18] [19] [20] [21] [25] [26] [27] including 05 cases of bacterial meningitis without rhinorrhea [6] [8] [20] [26] [27]. Medical treatment with antibiotic and hormone therapy had given good results in our patient, this result is similar to those of Margani and Akkache [5] [25]; This would theoretically increase the susceptibility to developing meningitis in the macro adenoma.

Medical treatment based on antibiotic therapy and hormone therapy has given good results [5] [25] which was the case in our patient; some authors [6] [9] [15] [19] [20] [21] [22] [27] have resorted to surgical treatment in addition to medical treatment. Although hormone treatment is effective on macro adenomas, there may be treatment failure or recurrence. This sometimes leads to surgery. It can also be in combination with surgery.

#### 4. Conclusion

Even untreated macroadenomas may present with meningitis without a history of CSF rhinorrhea. The diagnosis of acute bacterial meningitis should be considered at any time in the history of a pituitary adenoma. And it will be necessary to look for a pituitary adenoma in front of any unexplained meningitis. In addition, it is very important to be aware of this rare but dramatic presentation because early and aggressive management can modify the course of the disease.

#### Conflicts of Interest

The authors declare no conflicts of interest regarding the publication of this paper.

#### Contributions of Autors

Dr Djalogue L: Analysis, interpretation of data, writing of the manuscript and submission to the scientific journal,

Dr Agba L: identification of the case

Mossi KE, Tchamdja T, Djagadou KA: Correction of the manuscript;

Balaka A, Djibril MA: managing

#### References

- [1] Daly, A.F., Rixhon, M., Adam, C., Dempegioti, A., Tichomirowa, M.A. and Beckers, A. (2005) A High Prevalence of Pituitary Adenomas: A Cross-Sectional Study in the

- Province of Liège, Belgium. *The Journal of Clinical Endocrinology & Metabolism*, **91**, 4769-4775. <https://doi.org/10.1210/jc.2006-1668>
- [2] Chanson, P. and Maiter, D. (2019) The Epidemiology, Diagnosis and Treatment of Prolactinomas: The Old and the New. *Best Practice & Research Clinical Endocrinology & Metabolism*, **33**, Article ID: 101290. <https://doi.org/10.1016/j.beem.2019.101290>
- [3] Barraud, S., Découdier, B., Chaufour-Higel, B. and Delemer, B. (2019) Hyperprolactinémies et adénomes à prolactine. In: Guillevin, L., Mouthon, L. and Lévesque, H., Eds., *Traité de Médecine* (5th Édition), TDM Editions, Paris, 1-8.
- [4] Glezer, A. and Bronstein, M.D. (2015) Prolactinomas. *Endocrinology and Metabolism Clinics of North America*, **44**, 71-78. <https://doi.org/10.1016/j.ecl.2014.11.003>
- [5] Margari, N. and Page, N. (2014) Bacterial Meningitis as a First Presentation of Pituitary Macroprolactinoma. *Endocrinology, Diabetes & Metabolism Case Reports*, **2014**, Article ID: 140028. <https://doi.org/10.1530/EDM-14-0028>
- [6] Boscolo, M., Baleriaux, D., Bakoto, N., Corvilain, B. and Devuyst, F. (2014) Acute Aseptic Meningitis as the Initial Presentation of a Macroprolactinoma. *BMC Research Notes*, **7**, Article No. 9. <https://doi.org/10.1186/1756-0500-7-9>
- [7] Domengie, F., Cottier, J.P., Lescanne, E., Aesch, B., Vinikoff-Sonier, C., Gallas, S., et al. (2004) Management of Cerebrospinal Fluid Fistulae: Physiopathology, Imaging and Treatment. *Journal of Neuroradiology*, **31**, 47-59. [https://doi.org/10.1016/S0150-9861\(04\)96878-2](https://doi.org/10.1016/S0150-9861(04)96878-2)
- [8] Robert, T., Sajadi, A., Uské, A., Levivier, M. and Bloch, J. (2010) Fulminant Meningoencephalitis as the First Clinical Sign of an Invasive Pituitary Macroadenoma. *Case Reports in Neurology*, **2**, 133-138. <https://doi.org/10.1159/000321844>
- [9] Kpelao, E., Ahanogbe, M.H., Egu, K., Doleagbenou, A.K., Moumouni, K., Segbedji, K.K., et al. (2022) Prise en charge des adénomes hypophysaires au Togo. *Journal de la Recherche Scientifique de l'Université de Lomé*, **24**, 239-244.
- [10] Fontana, E. and Gaillard, R. (2009) Epidémiologie des adénomes hypophysaires: Étude dans une agglomération urbaine de suisse. *Revue Médicale Suisse*, **223**, 2172-2174.
- [11] Bah, M., Berté, B., Traoré, B., Diallo, K.B., Djibo, A., Traoré, D., et al. (2015) Étude des adénomes hypophysaires dans le service de médecine et d'endocrinologie de l'hôpital du Mali de Bamako. *Annales d'Endocrinologie*, **76**, 383. <https://doi.org/10.1016/j.ando.2015.07.258>
- [12] Assié, G., Villa, C. and Baussart, B. (2022) Génétique moléculaire et nouvelle classification des adénomes hypophysaires. *Bulletin de l'Académie Nationale de Médecine*, **206**, 831-836. <https://doi.org/10.1016/j.banm.2022.05.004>
- [13] Delgrange, E., Trouillas, J., Maiter, D., Donckier, J. and Tourniaire, J. (1997) Sex-Related Difference in the Growth of Prolactinomas: A Clinical and Proliferation Marker Study. *The Journal of Clinical Endocrinology and Metabolism*, **82**, 2012-2017. <https://doi.org/10.1210/jc.82.7.2102>
- [14] Klibanski, A. (2010) Prolactinoma. *The New England Journal of Medicine*, **362**, 1219-1226. <https://doi.org/10.1056/NEJMcp0912025>
- [15] Ndiaye, N., Léye, Y.M., Diack, N.D., Ndour, M.A., Fall, B., El Bou, O.I., et al. (2017) Forme rare d'adénome hypophysaire bi-sécrétant à ACTH et prolactine: À propos d'un cas. *Revue Africaine de Médecine Interne*, **4**, 66-69.
- [16] Abodo, J., Haidara, A., Dago, P.K., Kouassi, F., Hué, L.A. and Lokrou, A. (2016) Profil des adénomes hypophysaires en Afrique subsaharienne à propos de 38 cas.

- Annales d'Endocrinologie*, **77**, 368-369. <https://doi.org/10.1016/j.ando.2016.07.381>
- [17] Zarraa, L., Abdellaoui, W., Derbel, S., Assarrar, I., Rouf, S. and Latrech, H. (2021) Les adénomes hypophysaires sécrétant: Profil épidémiologique, Clinique, Radiologique et thérapeutique au CHU Mohammed VI Oujda. *Annales d'Endocrinologie*, **82**, 366-367. <https://doi.org/10.1016/j.ando.2021.08.316>
- [18] Bouizamarne, I., El Mghari, G. and El Ansari, N. (2016) Méningo-encéphalite révélant un macro adénome hypophysaire: À propos d'un cas. *Annales d'Endocrinologie*, **77**, 352. <https://doi.org/10.1016/j.ando.2016.07.323>
- [19] Benfiala, M., Bouchenna, A., Haffaf, L. and Ouedkabilia, S. (2015) Méningite bactérienne révélant un macroprolactinome, À propos d'un cas. *Annales d'Endocrinologie*, **76**, 395-396. <https://doi.org/10.1016/j.ando.2015.07.302>
- [20] Utsuki, S., Oka, H., Tanaka, S., Iwamoto, K., Hasegawa, H., Hirose, R., et al. (2004) Prolactinoma with a High Adrenocorticotrophic Hormone Level Caused by Meningitis—Case Report. *Neurologia Medico-Chirurgica*, **44**, 86-89. <https://doi.org/10.2176/nmc.44.86>
- [21] Bouchal, S., Razzouki, H., Ibn Elkhyat, S., Maaroufi, M., El Ouali, O., Messouak, O., et al. (2015) Méningo-Vascularite Bactérienne Révélant un Adénome Hypophysaire. *The Pan African Medical Journal*, **20**, Article 7. <https://doi.org/10.11604/pamj.2015.20.7.5271>
- [22] Hanel, R.A., Prevedello, D.M., Correa, A., Antoniuk, A. and Araujo, J.C. (2001) Cerebrospinal Fluid Fistula as the Presenting Manifestation of Pituitary Adenoma: Case Report with a 4-Year Follow-Up. *Arquivos de Neuro-Psiquiatria*, **59**, 263-265. <https://doi.org/10.1590/S0004-282X2001000200023>
- [23] Cagnin, A., Marcante, A., Orvieto, E. and Manara, R. (2012) Pituitary Tumor Apoplexy Presenting as Infective Meningoencephalitis. *Neurological Sciences*, **33**, 147-149. <https://doi.org/10.1007/s10072-011-0638-9>
- [24] Huang, W.Y., Chien, Y.Y., Wu, C.L., Weng, W.C., Peng, T.I. and Chen, H.C. (2009) Pituitary Adenoma Apoplexy with Initial Presentation Mimicking Bacterial Meningoencephalitis: A Case Report. *The American Journal of Emergency Medicine*, **27**, 517.e1-517.e4. <https://doi.org/10.1016/j.ajem.2008.08.004>
- [25] Akkache, L., Daffeur, K., Kalafate, N., Haddad, M. and Chentli, F. (2013) Méningite bactérienne et macroprolactinomes. *Journal de Neurochirurgie*, **17**, 30-36.
- [26] Onoda, N., Kamezu, Y., Takagi, S., Shinohara, Y. and Osamura, R.Y. (1992) An Autopsy Case of Invasive Pituitary Adenoma (Prolactinoma) with Rapid Fatal Clinical Course Due to Streptococcal Meningitis. *Pathology International*, **42**, 832-836. <https://doi.org/10.1111/j.1440-1827.1992.tb01885.x>
- [27] Honegger, J., Psaras, T., Petrick, M. and Reincke, M. (2009) Meningitis as a Presentation of Macro Prolactinoma. *Experimental and Clinical Endocrinology & Diabetes*, **117**, 361-364. <https://doi.org/10.1055/s-2007-1004553>