



The Stroke of Reno-Vascular Origin- Case Study

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Case Report

Volume 9 Issue 3

Received Date: June 27, 2024

Published Date: July 12, 2024

DOI: 10.23880/pprij-16000424

Abstract

The blood pressure higher than 140/80 mmHg is called hypertension(HTA). The high blood pressure (hypertension) is a risk factor for stroke. The causes of hypertension can be multiple, the less common is reno-vascular hypertension. In the present research we discuss a case of an adult who was diagnosed with renovascular hypertension complicated by stroke. The brain lesions caused by cerebral haemorrhage resulted in cognitive impairment and affective and anxiety disorders. The patient was admitted to a medical rehabilitation ward, where he underwent complex treatment, including psychotherapy. The patient's evolution was favourable, both physically and mentally, but the prognosis remains reserved.

Keywords: Stroke; Hemorrhage; Cognitive Impairment; Depression/Anxiety

Abbreviations

ADL: Activities of Daily Living; MAS: Modified Ainsworth Scale; FAC: Functional Ambulation Category.

Introduction

Stroke is an increasingly prevalent condition worldwide, with an estimated five million deaths from the disease each year, causing severe disability to another five million people [1]. Stroke is a major emergency and an important public health problem, characterised by very high morbidity and mortality, with disabling sequelae and exorbitant costs for health insurance systems. In Europe, the incidence of stroke varies from country to country, with an estimated 100 to 200 new strokes per 100,000 inhabitants per year, with major economic implications. Hypertension is a major cause of stroke. The current research brings to light a particular case of an adult who suffered a massive stroke of reno-vascular cause, resulting in multiple organic and psychological dysfunctions.

Presentation of the Case

Patient D. C, aged 53, male, urban, with high education, presenting for admission to a rehabilitation ward with the following charges: Motor deficit in the right hemi-corpus predominantly brachial, Orthotic and gait disturbances, right malaise with mixed character, Sensitivity disturbances in the right hemi-corpus, Global functional impotence, depressive mood, cognitive deterioration. In terms of history, we present the following:

Hereditary History: On paternal line: malignant prostate tumor, nasal wing tumors, bilateral, operated, severe mitral insufficiency; On maternal line- chronic ischemic heart disease, hypertension.

Personal Pathological History: Chronologically, the Patient has been Diagnosed with the following Diseases:

2013: HTAE, 3rd degree, with high CV risk controlled drugs. Dyslipidemia, Hypertensive heart disease

2015: diagnosed with BCR st IV, hypertensive nephropathy with right radio-cephalic arterio-venous fistula (2015)



25th September, 2023: hypertensive angiopathy, divergent strabismus both eyes, sequelae.

14th December, 2023: Suffers a hypertensive hemorrhagic stroke in puss, giant frontal, left lenticulo-thalamic capsulum, with severe ICH phenomena, with mass effect 6 mm dextrogy and secondary subfalcine brain mass herniation, corpus callosum dysgenesis, perilethional edema, right hemihypoesthesia, dyselectrolythemia (moderate hyponetremia, hypokalemia), secondary anemia, right central type facial paresis, *Proteus bacteriuria*.

- The patient has adequate living and working conditions, lives in an urban environment, is employed, university lecturer.

The Background Medication Administered Prior to Admission is as follows: Nebilet 5 mg 1-0-0, Furosemid 40 mg 1-0-0, Nitromint 2.6 mg 1-0-1, Sortis 20 mg 0-0-1, Lioresal 10 mg 1-1/2-1, Sistar (felodipine) 10 mg 1-0-0, Dopegyt (methyldopa- anti HTA act. central CNS), 250 mg, 2-2-4 reduced to 3x1/day Ketosteril, 0-2-2 during meals, Hepatofort 0-1-0, Neorecormon (erythropoetin) 5000 IU 1 inj.s.c every 2 weeks.

History of the Disease

The current disease started suddenly on December 14th 2023 with motor deficit in the right hemicortex, which started in the morning, speech disorders. On admission he presented himself in critical condition with blood pressure measuring 240/90 mmHg. Imagistically there was massive cerebral haemorrhage with giant frontal haematoma, left capsulo-lenticulo-thalamic, with severe ICH phenomena, with mass effect, 6 mm dextrogy and secondary subfalciform herniation of brain mass, corpus callosum dysgenesis, perilethional oedema, right hemihypoesthesia, in a known patient with Chronic Kidney Disease St. IV. He was treated on the ICU ward of Sibiu hospital, with hypercritical neurological status, acute right hemiplegia, right hemihypoesthesia, central facial paresis, dysarthria, hypertension 250/98 mmhg (central hypotensive Urapidil 20 mg/h), isolated extrasystoles on ECG, bilateral accentual pulmonary interstitium. Treatment followed: low flow oxygen therapy, hydroelectrolytic, acid-base, metabolic, haemostatic, fluidocoagulant rebalancing, hypotensive support from multiple pharmacological classes with slow favourable evolution and stabilization of vital functions. After stabilization on Intensive Care Unit he was admitted to the neurology ward, then to the physiotherapy ward for rehabilitation [2].

On 27.12. 2023 the patient performs a cranial X-ray, which showed: left lenticulo-capsulo-thalamic intraparenchymal hematoma in reabsorption, small petechiae with remaining acute hematic densities, compressive effect and deviation of the medial quasistationary structures, ventricular hematic

effacement in reabsorption, remaining at the right occipital horn level.

5.01.2024 is admitted to the neurological recovery ward of the Sibiu County Hospital: Barthel Index score 25/100-severe self-care and locomotion deficit, ADL (activities of daily living) score: total dependence, FAC (functional ambulation categories) index 0. Repeat skull x-ray: improved from 27.12. 2023. Discharges with the following status: sitting at the bedside with the help of physiotherapist, with firm support.

On 21.09. 2023 he was admitted to the Sibiu County Clinical Hospital for a clinical-biological evaluation, finding increased nitrogen retention (serum creatinine 4.08 mg/dl), severe renal functional deficit (rfg 14 ml/min/1.73 mp, subnephrotic proteinuria 1.8 g/24 h, mild hyponatremia, hypoalbuminemia, hyperuricemia, mild anemia. Ultrasonography: chronic nephropathy, both kidneys approx. 9 cm, dry cortico-medullary differentiation, cortical hyperechogenic. It is decided to delay haemodialysis.

He is currently admitted to our ward for evaluation and further medical rehabilitation treatment.

Local Specialist Examination

- The patient is conscious, cooperative, temporally and spatially oriented, partial and incomplete, asthenic.
- Subluxated right humerus, painful on palpation and mobilization in all axes and tendency to passive mobilization, tenderness on palpation of rotator cuff inserts.
- Upper limb right: coarse motor control present proximally and medially, no motor control distally
- Segmental Muscle Strength 3/5.
- Lower limb right: sketch of coarse motor control proximally and medially, no motor control distally, Babinski (+) on the right, FMS 2/5.
- Superficial hypoesthesia in the right hemicortex, more pronounced in the brachial area
- Osteo tendon hyperreflexia. Right hemicortex,
- MAS (Modified Ainsworth Scale) decreased,
- Right hand grip and coordination deficit,
- Dorsiflexion deficit in the ankle of the right leg;
- Ashworth 2 spasticity on left upper limb flexors and rotators and left lower limb extensors.
- No language disorders, continent sphincter.
- ADL (activities of daily living) score 4/10. st. III 3-8 - assisted independence;
- Barthel Index 25/100, the patient requires assistance from another person for all household activities and most self-care activities.

FAC (Functional Ambulation Category)=2 maintains for short periods sitting at the bedside with minimal assistance, stays in orthostatic with firm support for short periods (orthostatic hypotension).

After totaling the „Fall Risk Assessment” score, 18 points were determined on the John Hopkins Health System Corporation Scale (major fall risk) [3].

Based on the Medical Anamnesis, History of the Current Disease and Objective Clinical Examination I have Oriented Myself to the Following Stage Diagnosis:

- Central motor neuron syndrome with motor deficit located in the right hemicortex.
- Right humeral algo-dysfunctional syndrome.
- Anxiety Depression Syndrome

Paraclinical Investigations

- The laboratory examinations carried out during hospitalization showed: creatinine 2.48 mg/dl and in the second week 99 mg/dl, urea 94 mg/dl and in the second week 73 mg/dl in evolution, normocytic hypochromic anemia, severe insufficiency of total serum vit D 6.21 ng/ml. Urinary sediment - frequent microbial flora.
- The native cranial x-ray examination performed before admission (12th of January 2024) indicates a left lenticulo-capsulo-thalamic hypodense area, with a few hyperdense perilesional spots, without deviation of the midline, asymmetric cerebellum, with reduced left hemisphere size, with widening of the pericerebellar space and with widening of the cerebellar ditches in the upper left portion - with improvement of the changes compared to the admission of 27th of December [4].

Psychological Examination: Patient conscious, cooperative, partial spatio-temporal oriented - dysthymic affective mood, asthenia, fatigability; - mild cognitive impairment, Mini Mental State Examination test 27 points (mild impairment of cognitive and executive functions); Moris-Rosemberg scale 23 points - very low level of self-esteem; Beck Depression Scale 16 points: symptoms of sadness/moderate depression: hopelessness, fatigability, lack of energy, difficulty concentrating; anxiety scale S.T.A.I.- 52 points - generalized anxiety of moderate intensity as a condition and 41 points - mild anxiety as a personality trait, without behavioral disorders at the time of evaluation. I would also need an eye fundus examination, osteoporosis evaluation by DXA, urinary proteins evaluated quantitatively, renal ultrasound, chest X-ray, Cystatin C level which is a more accurate marker of GFR (for patients with stage 3 BCR), ionogram, PTH, which is not performed in our clinic.

On the Basis of the Medical History, the History of the Current Disease, the Objective Clinical Examination and the Paraclinical Investigations we Established the Positive Diagnosis of:

- Spastic right hemiparesis predominantly brachial post frontal hemorrhagic stroke and left capsulo-lenticulo-thalamic;
- Renovascular hypertension stage 3 with high additional risk
- Rotator cuff tendonitis
- Chronic medium anaemia
- Anxiety-depressive disorder
- Hypovitaminosis D

Specialized Medical Treatment

General Objectives: Improvement of motor deficit, Reduction of spasticity, Fighting vicious positions, Re-education of gait, Improvement of joint mobility and fight against pain; Improvement of self-serving skills and increase of functional independence, Prevention of complications (fall fractures, urinary infections, etc.) and relapses; Psycho-emotional improvement, Increase of quality of life [5].

Therapeutic Means

Hygienic-Dietetic Treatment:

- A low-sodium, normocaloric diet, rich in fibre and vitamins, purine intake (0.8 g/kgb/day); adequate water intake min. 2 l fluid/day;
- Pharmacological treatment with the above mentioned medication
- Medical rehabilitation treatment

Individual Physiotherapy: Objectives and means: Improve posture, Decrease spasticity, Improve coordination, control and balance, Improve right shoulder joint recovery, Re-education of gait, Re-education of thoracic and abdominal breathing.

Occupational Therapy: Objectives:- training of ADLs- training of prehension- development of skills already gained- restoration of postural balance - through training on stable and unstable surfaces - muscle strength will be increased through pedalling- acquiring a maximum degree of functional independence in self-care;- facilitating socio-professional reintegration by assigning occupational roles appropriate to current abilities.

Dorsal and lower limbs myorelaxant massage with avoidance of right hand massage, where it presents ArterioVenoasal (A-V) fistula.

Robotic Therapy (Gait Assistance and Retraining): reinstruction of physiological gait; stimulates neuroplasticity through long-lasting, intensely repetitive movements combined with visual, auditory and tactile feedback to maintain a high motivational level.

Right deltoid electrostimulation with rectangular currents for pain relief

Psychotherapy: this aims at stimulating intellectual functions, as well as counseling the patient to maintain a better psycho-emotional status; - stimulating cognitive functions by involving the patient in activities that generate positive

emotions; reducing the intensity of depressive-anxiety disorders through cognitive-behavioral psychotherapy - educating relatives to provide adequate emotional and psycho-affective support. Parameters on clinical scales have improved, but require further psychotherapy.

Possible Complications: A-V fistula effacement - increased spasticity, installation of vicious positions due to spasticity, urinary infections; fractures through falls; worsening of the underlying disease/ relapse of cerebral haemorrhage-escalation of affective pathologies.

Discharge Recommendations: Hyposodium diet, rich in fiber and vitamins,- adequate hydration (minimum 2l of fluids/day) and diuretic treatment - on the fistula hand do not monitor Blood Pressure, do not collect blood - monitoring of renal function (urea, creatinine, hemoleucogram, Na, K)- in case of decreased diuresis and dyspnea, referral to ER is necessary - avoidance of high purine foods, nephrotoxic drugs, including medications - cognitive-behavioral psychotherapy; - continuation of home gymnastics, - prevention of falls, - ophthalmological consultation (hypertensive angiopathy), - cardiological dispensation and nephro urological consultation in order to evaluate cardiac and renal pathology, - Ketosteril treatment 3x1/day and neorecormon 5000 u.i. inj. every 2 weeks.

Evolution and Prognosis: As far as cerebrovascular pathology is concerned, the evolution of the disease is slowly favorable, with mild improvement of motor deficit and improvement of gait. The long-term prognosis is uncertain, given the possibility of vascular relapses and advanced renal dysfunction - prognosis ad vitam is reserved - prognosis ad

functionem is reserved - prognosis ad sanationem: reserved - prognosis ad laborem is reserved [6].

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