European School of Internal Medicine:
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Case Report

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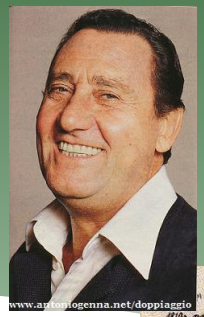
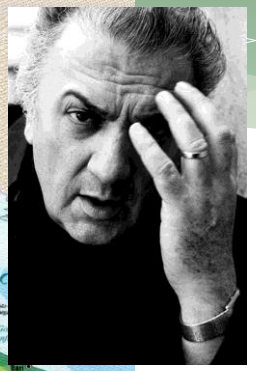


GRANDE FRATELLO



Ia PROVA del CUOCO

The Case: chief complaint

- BD, 42-year-old male
- Deep asthenia in the previous month
- 1-week history of dyspnoea on exertion
- Access to GP and then to the Emergency Department (ED) due to haemoglobin value of 7 g/dL (n.v. 12-15 g/dL)

ED

• Physical examination: good general appearance, conscious, **alert**, cooperative, **eupnoic**, paleness of the skin and mucous membranes. Normal chest, abdominal and neurologic examinations

•Normal vital signs: BP 100/60 mmHg HR 70 bpm.

• Arterial Blood Gas: pH 7.42 (n.v. 7.35-7.45)
PCO_2 38 mmHg (35-45 mmHg);
PO_2 105 mmHg (>79 mmHg);
SpO2 99% (>94%);
HCO_3^- 24.6 mmol/L (22-26 mmol/L);
BE 4.1 mmol/L (±2 mmol/L)

• Blood Tests:
- ✓ **RBC: 1.8 million**/µL(4.6-7 million); **Hb: 7** g/dL (12-15 g/dl)
- ✓ **MCV: 111** fL (80-100 fl); **Hct: 20.1**%(45-52%); MCHC 34.6 g/dL (32-26 g/dl)
- ✓ **Tot. Bil. : 2.77** mg/dL (0.3-1.9 mg/dL); Dir. Bil.: 0.78 mg/dL (0-0.3 mg/dL)
- ✓ **LDH: 1490 UI/L** (100-190 UI/L)

• Peripheral Blood smear: marked **anisopoikilocytosis**, **reticulocytes 11/1000**.

ADMISSION TO INTERNAL MEDICINE WARD

PHYSIOLOGICAL ANAMNESIS

Varied diet with the exception of a low vegetables intake

PHYSICAL EXAMINATION

Waxy paleness of the skin and mucous membranes.
Cardiovascular, respiratory, abdominal, and neurological examinations were normal.

BLOOD TESTS

Complete cell blood count:

RBC: **1.75 milion/µL**; (4.6-7 milion); Hb: **6.5 g/dL** (12-15 g/dl) ; **MCV: 115** fL (80-100 fl); MCH 37 pg (27-31 pg/c); MCHC 32.0 g/dL (32-26 g/dl); **HCT: 20.2%**(45-52%); PLT: 181000/µL (150000-450000); **RET: 1.71**% (0,5-1,5%) ;WBC: 4370/µL (3500-10500); NEU: 57.3%; LYM: 32.5%; EOS: 6.4%; BAS: 0.4%; MON: 1.8%;

Other tests:

Iron: 176 µg/dL (60-170 µg/dL) ; Ferritin: 268 ng/mL (12-300 ng/mL); Transferrin: 1.46 mg/dL (204–360 mg/dL); **Total Bilirubin: 2.77 mg/dL**dL (0.3-1.9 mg/dL); **Direct Bilirubin : 0.78 mg/dL** (0-0.3 mg/dL); LDH 1490 UI/L (100-190 UI/L);

FT3: 2.3 pmol/L (3.5-7.8 pmol/L); FT4: 1.17 pmol/L (9-23 pmol/L); TSH: 5.07 µUI/mL (0.4-4.5µUI/mL)

Inflammation markers:

ESR 2 mm/h (</= 20 mm/h); CRP 3.7 mg/L (< 0.8 mg/L)

Protein electrophoresis :

Normal

DIAGNOSTIC HYPOTHESES

Hemolytic Anemia

Vs.

Megaloblastic Anemia

FURTHER INVESTIGATIONS

Immunohematologic tests:
Direct Coombs test: Neg;
Anti-red blood cell antibodies : Neg;
Cold Agglutinin: Neg;
Biphasic haemolysin : Neg;
Ham Test: Neg

Other exams:
Folic Acid : 7,3 ng/mL (2.7 - 17.0); **Vit. B12: 59 pg/mL (191.00 - 663.00)**

MEGALOBLASTIC ANEMIA from VITAMIN B12 DEFICIENCY

WHAT'S NEXT?

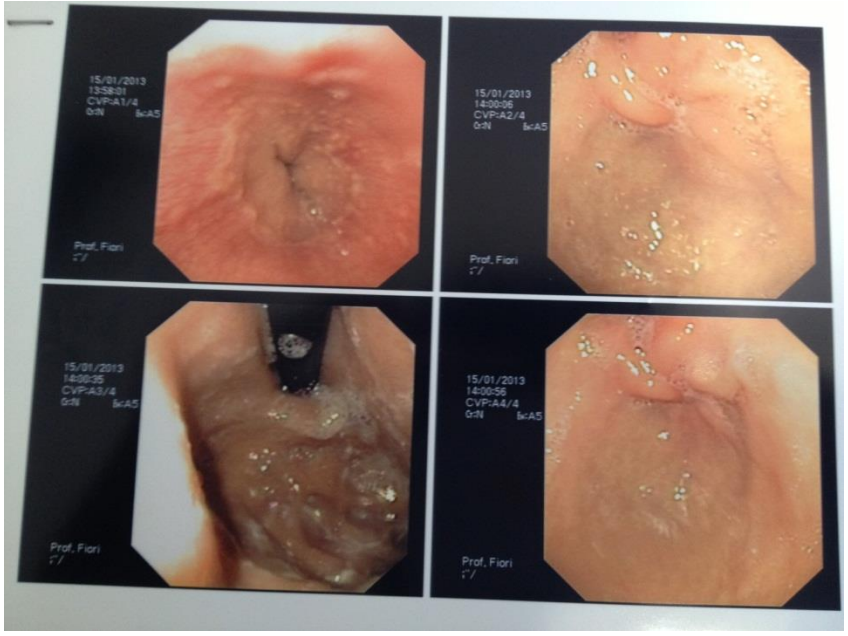
OTHER DIAGNOSTICS

Autoimmunity:

- **Antinuclear antibodies** : Positive ++ with a **homogenous pattern**
- **Gastric parietal cell antibodies**: Positive +
- **Anti-thyroid peroxidase antibodies**: 246,52 UI/mL (v.n. <100.00)

Esophagogastroduodenoscopy:

- Stomach: good distensibility, pale gastric mucosa . Biopsies of fundus, body and antrum were done.
- Duodenum: Nothing abnormal untill the second portion. Biopsies were done in the second portion of the duodenum.



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OTHER DIAGNOSTICS

Histology:

STOMACH: Several fragments of thin antral mucosa, with **Edema** of the **chorion** and mild **Gland rarefaction;** mild inflammatory **lymphoplasmacellular** and **granulocytes** infiltration, no intraepithelial infiltration. **Intestinal epithelium with caliciform and absorption cells.**

Diagnosis:

Chronic atrophic gastritis, active, with complete and incomplete intestinal metaplasia. Positive Helicobacter Pylori research (2+).

PERNICIOUS ANEMIA IN PATIENT WITH CHRONIC ATROPHIC GASTRITIS AND AUTOIMMUNE THYROIDITIS

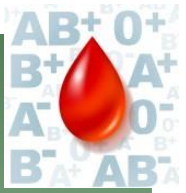
THERAPY

Vitamin Supplementation :

- Guidelines do not exist
- In literature:
  - ✓ Initial loading dose of **vitamin** B-12: 1000 µg/die **intramuscular** or **subcutaneous** for 1-2 weeks
  - ✓ Following dose of **vitamin** B-12: 1000 µg IM o SC /week until clinical improvement
  - ✓ Maintenance dose of **vitamin** B-12 : 1000 µg IM o SC /month

N Engl J Med 2013;368:149

BLOOD TRANSFUSION



IV. CHRONIC ANEMIA

Patients presenting with a chronic anemia will have developed compensatory mechanisms, such as increased blood flow due to lowered viscosity and increased release of oxygen due to higher levels of 2,3-DPG. This may allow time for careful observation prior to transfusion.

A. Anemia Treatable by Non-transfusion Therapy

The cause of the anemia should be established. RBC transfusion is contraindicated if specific replacement therapy is possible (e.g., iron, vitamin B12, folic acid). Transfusion should only be used under these conditions if the situation is life-threatening, such as in the case of emergency surgery, trauma, or other acute blood loss.

…AND THEN?

Two-weeks Post-discharge Controls:

Complete cell blood count:
RBC: 3.32million/µL; (4,6-7 million)
Hb: 10.8 g/dL; (12-15 g/dl)
MCV: 101 fL; (80-100 fl)
MCH 32.5 pg; (27-31 pg/c)
MCHC 32.3 g/dL; (32-26 g/dl)
HCT: 33.4%; (45-52%)
PLT: 384000/µL;(150000-450000)
WBC: 8400/µL; (3500-10500)
NEU: 76.2%; LYM: 10.05%; EOS: 5.5%; BAS: 1.7%; MON: 6.6%;