



IMPORTANCE OF INTRACEREBRAL HEMORRHAGE VOLUME AND THE ROLE OF MEDICAL AND KINETHOTERAPEUTIC TREATMENT

DOCU AXELERAD ANY¹, DOCU AXELERAD DANIEL²

Abstract

Intracerebral hemorrhage is focal bleeding from a blood vessel in the brain parenchyma that may extend to ventricles,) is the second most common cause of stroke, following ischemic stroke. It accounts for **8-13%** of all stroke cases. It is the **third leading cause** of death and the leading cause of disability in the US. In cases of cerebral hemorrhage, death results from extensive bleeding that causes increased pressure on the brain resulting in neurological damage.

Predilection sites for Intracerebral hemorrhage include the basal ganglia (40-50%), lobar regions (20-50%), thalamus (10-15%), pons (5-12%), cerebellum (5-10%), and other brainstem sites (1-5%).

The role of kinetotherapy procedure is less known in principal the day of beginning of them.

Material and methods: For statistical analysis of Intracerebral hemorrhage in order to know its prognosis and evolution, retrospective type of study has been chosen and done in Spitalul Judetean Constanta included all patient hospitalized between 01.01.2011-01.06.2011

Results:

- All the patients who have ICH had medical treatment. Some undergo surgical removal too. According to theory, patients needed medical treatment with labetalol, nitroprusside or hydralazine for blood pressure control, Mannitol or osmotherapy for increase ICP, fluid management for hydroelectrical balance, phenytoin for prevention of seizures and also control of body temperature and other symptomatic treatments with Algalmin Metoclopramide, Quamatel, Vit b complexes etc.
- Kinetotherapy treatment
Rehabilitation programme objectives: induce of volutar motor activity; prevent wrong movement; prevent muscle retractures and joints diformities, decrease spasticity. Rehabilitation programme: we used physical programme for reduce pain, spasticity and also kinetic method for each objective. In each month we followed the evolution using specific scale assessment. We must say that during the acute period they did not came at rehabilitation programme.

Conclusions

- Although we are assisting a new and highly established medical drugs and interventions in the field of modern medicine, ICH are unfortunately common in Neurology department. It is the second most common cause of stroke, following ischemic stroke.
- HTA is the major risk factor, morbidity and mortality is increased with the size of hematoma, location of hematoma, ventricular extension presence, blood glucose level and advanced age. Also GCS score is important in evaluation of prognosis in patients with ICH.
- Evolution of patients with ICH is not good. Majority had Hemiplegia, aphasia, facial palsy and dysphagia. Death rates are high for IVHs.
- The best method of prevention of ICH is good control of HTA, careful follow up of cases and removal of risk factors and education of public with respect to risk of development of ICH.
- Intracerebral hemorrhage will continue to be an important problem as the population ages in the world. Treatment is limited currently and is primarily supportive. Despite historically poor outcomes in ICH, there is considerable hope that the identification of factors involved in neurologic morbidity, early hemostasis, and removal of intracerebral hematomas will improve the short-term treatment of ICH.

All patient with stroke have hemiplegia, an for all we started a recuperation program in hospital in acute stroke with kinetotrapeut and we recommend for home a battery of exercise if the condition state permitted.

Keywords: hemorrhage stroke, hemorrhage volume, kinetotherapy, prognostic.

Introduction

Definition: Intracerebral hemorrhage is focal bleeding from a blood vessel in the brain parenchyma that may extend to ventricles.

Incidence: Intracerebral hemorrhage (ICH) is the second most common cause of stroke, following

ischemic stroke. It accounts for **8-13%** of all stroke cases (SHEP Cooperative Research Group, 1991).

It is the **third leading cause** of death and the leading cause of disability in the US. In cases of cerebral hemorrhage, death results from extensive bleeding that causes increased pressure on the brain

¹Ovidius University from Constanta, General Medicine Faculty, ROMANIA

²Ovidius University from Constanta, Physical Education and Sport Faculty, ROMANIA

E-mail: docuaxi@yahoo.com

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resulting in neurological damage.

Sites: Predilection sites for Intracerebral hemorrhage include the basal ganglia (40-50%), lobar regions (20-50%), thalamus (10-15%), pons (5-12%), cerebellum (5-10%), and other brainstem sites (1-5%) (J.P. Broderick, S. Connolly, E. Feldmann et al., 2007).

Etiology: The cause is usually hypertension (Hypertension Detection and Follow-up Program Cooperative Group, 1982). Other frequent causes are Vascular malformations, Intracranial tumors, bleeding disorders, anticoagulant and fibrinolytic treatments, cerebral amyloid angiopathy(CAA) etc.

Prognosis is generally poor after an intracerebral hemorrhage, although some patients can recover most function. Long-term mental and physical disability usually occurs (S.M. Davis, J.P. Broderick, M. Hennerici et al., 2006).

Its clinical importance derives from its **frequency** and **high mortality**. Although the latter is strongly dependent on hematoma size and to a lesser extent location, the overall mortality for this stroke subtype varies between **25% - 60 %** (J.P. Broderick, S. Connolly, E. Feldmann, et al., 2007).

Typical symptoms ;include focal neurologic deficits, often with abrupt onset of headache, nausea, and impairment of consciousness.

Diagnosis is by CT or MRI and other usual diagnostic tools.

Treatment ; Intracerebral hemorrhage is a severe condition requiring prompt medical attention. It may develop quickly into a life-threatening situation. Treatment includes BP control and control of seizures, anticoagulation, supportive measures, and for some patients, surgical evacuation. Choice between Medical and Surgical Therapy should be carefully made. The role of kinetotherapy procedure is less known in principal the day of beginning of them.

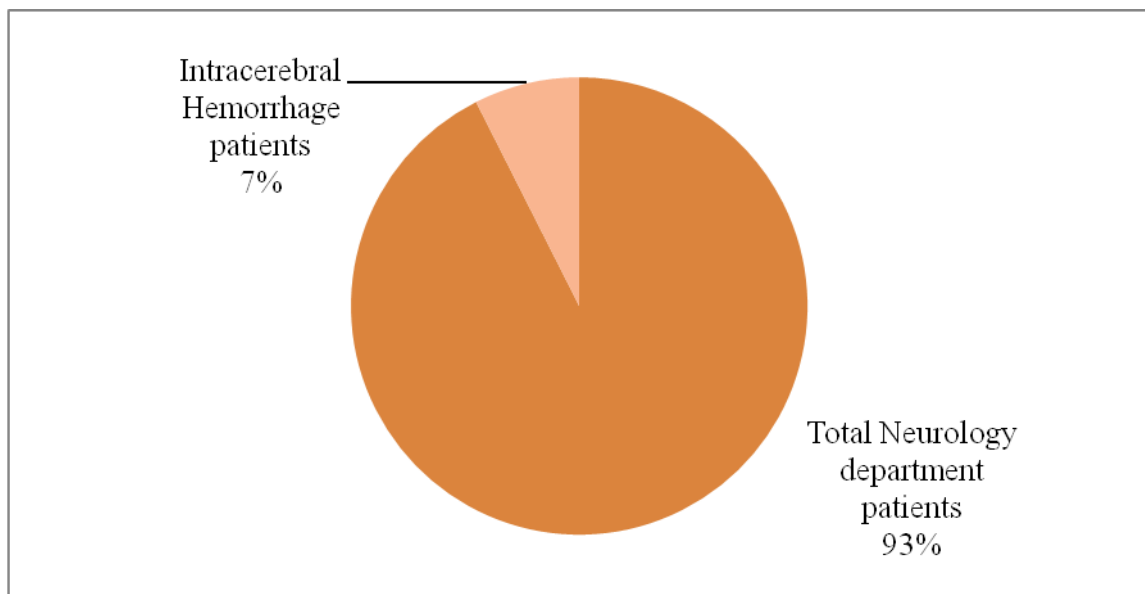
Complications includes; Neurological deficits, Seizures Hydrocephalus, Spasticity, Urinary complications, Deep venous thrombosis (DVT),Pulmonary emboli, Cerebral herniation, Loss of cognitive function, Loss of movement of arm(s) or leg(s),dysphagia, dysphasia, vision loss etc.

Material and methods: For statistical analysis of Intracerebral hemorrhage in order to know its prognosis and evolution, retrospective type of study has been chosen and done in Spitalul Judetean Constanta included all patient hospitalized between 01.01.2011-01.06.2011

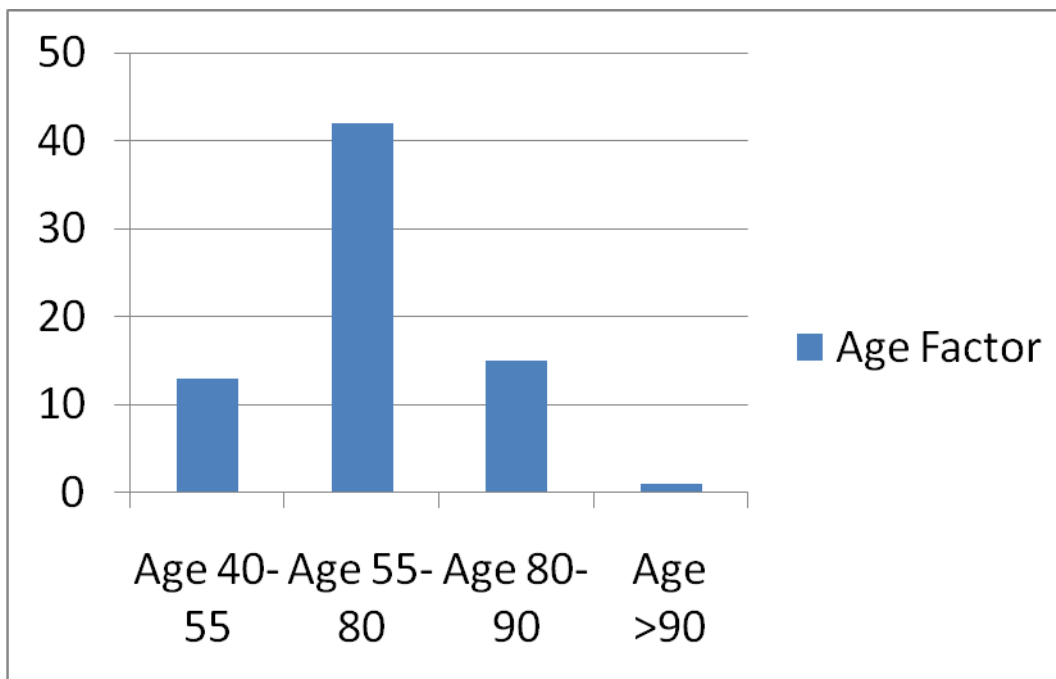
Results:

Incidence of ICH :

- 70 patients had developed ICH out of total 868
- patients admitted to Neurology department.



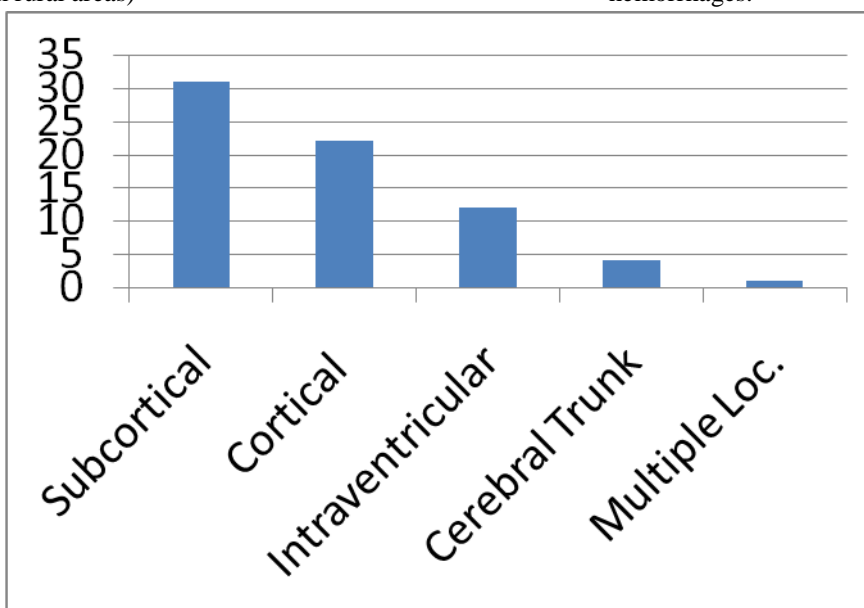
- The most frequent ages for Intracerebral Hemorrhage is between 55-80 years.
- High risk of ICH in old age.



- There is no sex difference in the incidence of ICH as it is quite balanced between two sexes.

Males	Females
35 Patients	35 Patients

- Comparing urban with rural residency it is found that increased number of ICH patients are from countryside due to poor medical assistance. (57 % patients affected by ICH are from rural areas)
- Localization of ICH
 - Different locations of Cranium are affected by ICH .The most common one is Subcortical regions of Brain including putaminal hemorrhages.



- As an average, patients of ICH have stayed for 2 weeks at hospital.

- Some patients either progress to death or received by their relatives due to worsening evolution and therefore duration of stay was not more than 1-7 days.

However some stayed for more than 2 weeks for treatment and control

Risk Factors

- Hypertension(HTA):*

**HTA is the most known risk factor for ICH.*

**Hypertensive ICH most commonly occurs in nonlobar locations .*

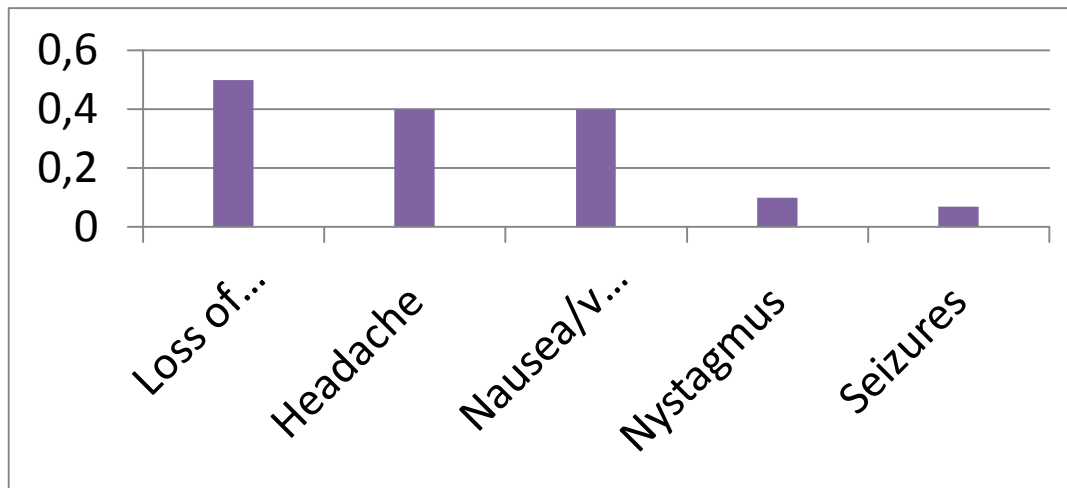
**Out of 70 patients studied, 33 patients were having Hypertension grade II and grade III. 14 patients were having systolic blood pressure above 160mm-hg*

- Other risk factors:

Dislipidemia, Alcoholism, Diabetes mellitus, Obesity and Cardiopathy are other major risk factors for ICH (H. Iso, D.R. Jacobs, D. Wentworth, J.D. Neaton, J.D. Cohen, 1989)..

Motives of Presentation to Hospital

All patients with ICH are symptomatic with sudden loss of consciousness or altered general state, persistent headache, vomiting and nystagmus. Some had seizures. Usually patients suffer from progression of neurological symptoms.



Paraclinical Examinations :

CT scan give 90 % correct diagnosis.

Other paraclinical tests include:

-HLG

-Glycemia

-ESR/Fibrinogen

-Biochemistry(AST/ ALT, Cholesterol , LDH

etc.)

-Coagulation Profile(PT,APTT,INR)

-Urine analysis

Lab TESTS

- Almost all patients have some abnormalities in hemoleucogram.
- On Biochemistry examination LDH is usually elevated along with fibrinogen, CK and elevated ESR.
- Abnormal PT level is sometimes seen.
- Urine analysis showed usually normal results with exception of some patients with few blood, leucocytes and glucose in Urine.

- Volume or dimension of hematoma on CT scan has the greatest value in prognosis and evolution of ICH but also to decide about the treatment plan

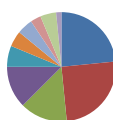
- Presence of IVH signifies high mortality and worse prognosis. Ventricular extension usually seen with Caudate, thalamic, large putaminal and large lobar hemorrhages.

- Presence of midline shift >5 mm is indication of surgical consultation.

Evolution

- Overall evolution for ICH is not good as it has high mortality due to severe consequences and higher frequency due to HTA. Most of the patients die due to complications and worse prognostic factors. Patients who survive have following consequences or sequelae as observed:

- Number of patients**



- Left sided hemiplegia
- Right sided Hemiplegia
- Aphasia
- Bubinski sign
- Facial Palsy

Medical Treatment

- All the patients who have ICH had medical treatment. Some undergo surgical removal too. According to theory, patients needed medical treatment with labetalol, nitroprusside or hydralazine for blood pressure control, Mannitol or osmotherapy for increase ICP, fluid management for hydroelectrical balance, phenytoin for prevention of seizures and also control of body temperature and other symptomatic treatments with Algalmin Metoclopramide, Quamatel, Vit b complexes etc.
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Indications for treatment with medical drugs are:

- Hematoma < 10 cubic cm or with minimal neurological deficits
- Very good or very bad prognostic feature presence

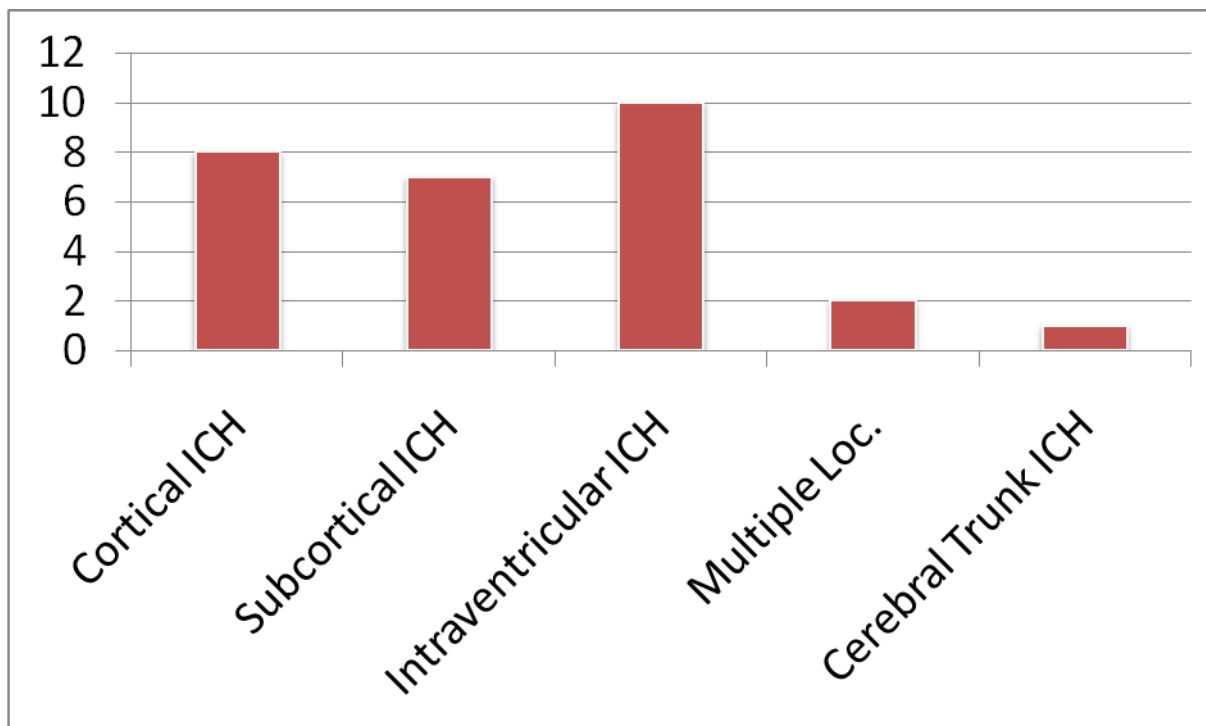
- Diverse hemorrhages with great neurological deficits or large lobar hemorrhages
- GCS <5 or GCS > 10
- Patients with intense coagulopathy or previous chronic disease
- Very old patients who cannot tolerate operation > 75 years
- Deep hemorrhages like Basal ganglia or thalamic hemorrhages
- Pons hematoma
- NEUROSURGICAL CASES(Only 6 cases Out of 70 needed neurosurgical consultation)

ICH is managed and treated by medical therapy in most cases however there are certain indications of neurosurgery:

- * Progressive loss of consciousness
- * Aneurysm , AVM or presence of tumor in Angiography
- * >15 cubic cm in cerebral hemorrhage or > 3cm in cerebellar hemorrhage
- * Midline shift or brain stem compression effect
- * Obstructive Hydrocephaly
- * Lobar and cerebellar hematoma
- * Hematoma in nondominant hemisphere

Mortality Rates

- ICH has high mortality outcome.
- Intraventricular hemorrhage is the most dangerous type of ICH for the life of patients.



Mortality Factors

- Large volume of hematoma
- Intraventricular location of hematoma (2 fold increase in death)
- Associated disease and risk factor presence; like HTN
- Lower GCS (GCS less than 8 with 30 days of mortality rate)
- Presence of aneurysm
- Patient receiving oral anticoagulant therapy (OAT)
- Abnormal lab findings of cholesterol or blood glucose
- Previous history of Stroke
- Advanced ages (above 65 years)
- Poor Response of patients to medical or surgical treatments

Conclusions

- Although we are assisting a new and highly established medical drugs and interventions in the field of modern medicine, ICH are unfortunately common in Neurology department. It is the second most common cause of stroke, following ischemic stroke.
- HTN is the major risk factor, morbidity and mortality is increased with the size of hematoma, location of hematoma, ventricular extension presence, blood glucose level and advanced age. Also GCS score is important in evaluation of prognosis in patients with ICH.
- Evolution of patients with ICH is not good. Majority had Hemiplegia, aphasia, facial palsy and dysphagia. Death rates are high for IVHs.

Clinical Status at discharge of patients from Hospital

- There are large ratios of patients who get worse at the clinic due to failure of every intervention and then die due to development of complications usually within 2 days.
- ICH is a disabling syndrome, therefore patients at presentation with coma get better only with accurate control of HTN and ICP, however most of them develop consequences of ICH that remains throughout their life .
- Patient's clinical status can be: Ameliorated(27%),aggravated(33%),death(40 %).
- The best method of prevention of ICH is good control of HTA, careful follow up of cases and removal of risk factors and education of public with respect to risk of development of ICH.
- Intracerebral hemorrhage will continue to be an important problem as the population ages in the world. Treatment is limited currently and is primarily supportive. Despite historically poor outcomes in ICH, there is considerable hope that the identification of factors involved in neurologic morbidity, early hemostasis, and removal of intracerebral hematomas will improve the short-term treatment of ICH.
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References

- BRODERICK, J.P., CONNOLLY, S., FELDMANN, E. et al., 2007,** *Guidelines for the management of spontaneous intracerebral hemorrhage in adults: 2007 update: a guideline from the American Heart Association/American Stroke Association Stroke Council, High Blood Pressure Research Council, and the Quality of Care and Outcomes in Research Interdisciplinary Working Group.* Circulation; 116:e391-e413
- DAVIS, S.M., BRODERICK, J.P., HENNERICI, M. et al., 2006,** *Hematoma growth is a determinant of mortality and poor outcome after intracerebral hemorrhage.* Neurology; 66:1175-1181
- GORELICK, P.B., 1987,** Alcohol and stroke. Stroke;18:268-271.
- HYPERTENSION DETECTION AND FOLLOW-UP PROGRAM COOPERATIVE GROUP, 1982,** *Five-year findings of the Hypertension Detection and Follow-up Program. III. Reduction in stroke incidence among persons with high blood pressure.* JAMA;247:633-638.
- ISO, H., JACOBS, D.R., WENTWORTH, D., NEATON, J.D., COHEN, J.D., 1989,** Serum cholesterol levels and six-year mortality from stroke in 350,977 men screened for Multiple Risk Factor Intervention Trial. N Engl J Med; 320:904-910
- SHEP COOPERATIVE RESEARCH GROUP, 1991,** *Prevention of stroke by antihypertensive drug treatment in older persons with isolated systolic hypertension: final results of the Systolic Hypertension in the Elderly Program (SHEP).* JAMA;265:3255-3264

