

SUMMARY REPORT OF THE CONTRIBUTIONS FROM PREVIOUS ESTM COURSES TO THE MANAGEMENT OF CRITICALLY ILL AND INTENSIVE CARE PATIENTS

Umberto Rossi

For the third consecutive year the ESTM has been asked to help in shaping the programme of the Slovenian-organised postgraduate courses on Blood therapy in surgery in Portorož, and I like first of all to express my deep appreciation for this collaboration.

The **first** course (December 1999) concerned *"Autotransfusion"* ⁽⁷⁾, and 8 lectures were given by 6 teachers from 4 countries (Table I).

Table I - Blood therapy in surgery. Autotransfusion ⁽⁷⁾

Slovenian/ESTM residential course, Portorož, Slovenia, 9th-11th December 1999
(Coordinators: V. Brubnjak-Jevtič, U. Rossi)

Session on autotransfusion:

- Rossi U.: The role and significance of autotransfusion in Transfusion Medicine today.
 - Mercuriali F.: Preoperative assessment of transfusion requirement in surgery: personalized approach.
 - Baron J.-F.: Transfusion triggers in surgical patients.
 - Inghilleri G.: Techniques of reducing perioperative blood loss.
 - Mercuriali F.: Techniques to increase tolerated blood loss.
 - Earnshaw P.: Transfusion alternatives in orthopaedic surgery.
 - Mempel W.: Organization of an integrated autotransfusion programme.
 - Inghilleri G.: Results of an integrated programme of current autotransfusion techniques.
-

The **second** course (December 2000) concerned *"Safety assurance in blood therapy"* ⁽⁸⁾, and 6 lectures were given by 4 teachers from 4 countries, in a session on *"Blood safety today"* (Table II).

Table II - Blood therapy in surgery. Safety assurance in blood therapy ⁽⁸⁾

Slovenian/ESTM residential course, Portorož, Slovenia, 14th-16th December 2000
(Coordinators: V. Brubnjak-Jevtič, U. Rossi)

Session on blood safety today:

- Barbara J.: Risk reduction: how to reconcile it with epidemiology. ⁽¹⁾
 - Rossi U.: The urgent need of mutually compatible criteria and behaviour for blood safety in Europe. ⁽²⁸⁾
 - Hafner V.: Blood safety in European countries with limited resources. ⁽¹⁴⁾
 - Barbara J.: Transfusion risk and its perception in a wider context. ⁽²⁾
 - Grgičević D.: Quality control and quality management of blood safety. ⁽¹³⁾
 - Hafner V.: WHO perspective on blood safety.
-

In the above session, summary reports were given of the contributions brought to the ESTM course of Bruxelles (26th-29th February 2000) on *"Risk perception and*

risk assessment in transfusion practice” ⁽⁴⁾, where the medical advantages and clinical indications of transfusion could be weighed against its risks, scientifically and comparatively evaluated ^(1, 2), and the urgent need of mutually compatible criteria and behaviour for blood safety in Europe was underlined ⁽²⁸⁾, considering the situation in European countries with limited resources ⁽¹⁴⁾. These concepts were also developed ⁽¹⁷⁾ in another ESTM residential course in Castellanza (22nd-23rd June 2000) on **“Haematology and Transfusion Medicine in the year 2000: reality and prospects”** ⁽²⁰⁾.

The session of Portorož 2000 can be now well be considered to have been an important step towards the ESTM course on **“The future of blood safety, a challenge for the whole Europe: how can international regulations be implemented all over”** ⁽³⁾ recently held in Sarajevo (25th-28th October 2001), where the ways of increasing blood safety in Europe by education and quality management were explored, in many directions: to help shape a proper cultural approach to transfusion risk management; to analyse the risk of an increasingly diverging quality of Transfusion Medicine in Europe; to see whether, somewhat setting aside the issues of financial resources and rather addressing human behaviour, education in quality management could be a timely way of harmonising the widely different situations existing in today’s Europe; to enhance a more responsible collective consideration of present strategies of prevention, and the drafting of national and European regulations concerning blood safety.

The **third** and present course (December 2001) concerns problems of **“Transfusion Medicine and intensive care in surgery”** ⁽²¹⁾, and 4 lectures are being given by 4 teachers from 4 countries (Table III).

Table III - Blood therapy in surgery. Transfusion Medicine and intensive care in surgery
Slovenian/ESTM residential course, Portorož, Slovenia, 13th-15th December 2001 (Coordinators: L. Lukič, B. Kremžar, V. Brubnjak-Jevtič, U. Rossi)

-
- Gašparovič V.: Multiple organ failure as a complication in intensive care patients.
 - Strengers P.: Plasma protein products in critical care medicine.
 - Hellstern P.: Transfusion treatment of haemostatic disorders in surgical intensive care patients.
 - Rossi U.: Summary report of the contributions from previous ESTM courses to the management of critically ill and intensive care patients.
-

Many of the issues dealt with in this course have been thoroughly discussed in some previous ESTM residential courses: **“Transfusion Medicine and intensive care”** ⁽⁵⁾, in Linz (6th-9th November 1997); **“Transfusion Medicine in disasters and hospital emergencies”** ⁽³⁰⁾, in Pescara (11th-14th June 1998); **“Therapeutic haemapheresis - Diagnosis and transfusion treatment of emergencies in haemostatic disorders”** ⁽¹⁶⁾, in Prague (12th-15th November 1998).

Most of the contributions brought to these courses keep their value also after 2-3 years, and I shall therefore try to summarise their content and underline their main conclusions.

In **Linz** (Table IV), 30 lectures were given by 27 teachers from 5 countries.

A careful analysis of the patient population of the intensive care units was made ⁽⁶⁾, and the present situation of critical care in Europe was described.

Oxygen consumption and volume regulation were reported in different clinical situations.

Pathophysiological and clinical aspects of trauma, of infections and sepsis, of burns and gut dysfunction, and of cerebral, respiratory, cardiac, acute renal, hepatic and metabolic failure were clarified.

A clinical definition was attempted of intensive care patients in haematology ⁽¹⁹⁾, trying to distinguish the haematological disorders and syndromes often associated with life-threatening complications from the therapy-induced severe complications.

The pathophysiology, clinical presentation and treatment of haemorrhagic and traumatic shock was illustrated ⁽²²⁾ and the problems of emergency and massive transfusion thoroughly analysed, related both to complications of elective surgery and to emergency admission: reaching the conclusion that “emergency transfusion includes several particular risks and problems which only can be sufficiently managed by appropriate organisational measures and defined replacement schemes” ⁽¹⁸⁾.

A full pathogenetic and clinical account was given of the DIC (disseminated intravascular coagulation) syndrome ⁽²⁹⁾, as a typical example of the need of a full clinical-laboratory collaboration.

Several general and specific aspects of transfusion therapy in intensive care patients were discussed, such as its rational basis, the critical haematocrit, red cell, granulocyte and platelet substitution, the possible use of oxygen-carrying blood substitutes, and the therapeutic use of crystalloids and colloids, fresh-frozen plasma, albumin and immunoglobulins.

Table IV - Transfusion Medicine and intensive care ⁽⁵⁾

Proceedings of the ESTM residential course, Linz, Austria, 6th-9th November 1997 (Coordinators: B. Blauhut, J. Skodlar)

-
- U. Rossi (Legnano, Milano, Italy; ISBT Councillor; ESTM President): Introduction to “Transfusion Medicine and intensive care” ⁽²⁵⁾
 - H. Brock (Linz, Austria): Patient population of the intensive care units ⁽⁶⁾
 - N. Weiler, B. Eberle (Mainz, Germany): Oxygen availability, oxygen consumption, and oxygen demand
 - H. Brock (Linz, Austria): Volume regulation
 - E. Faist, Ch. Schinkel, S. Zimmer (München, Germany): Inflammation and counterinflammation in trauma, SIRS and sepsis
 - H. Mittermayer (Linz, Austria): The diagnosis of infections
 - W.H. Löffler (Linz, Austria): Cerebral failure
 - S. Necek (Linz, Austria): Respiratory failure
 - K. Lenz (Linz, Austria): Cardiac insufficiency in the critically ill
 - S. Zielmann (Göttingen, Germany): Gut dysfunction
 - G. Biesenbach (Linz, Austria): Pathophysiology of acute renal failure
 - B. Schneeweiss (Kirchdorf, Austria): Pathophysiology of the intensive care patient: hepatic and metabolic failure
 - B. Labar (Zagreb, Croatia): Clinical definition of intensive care patients in haematology ⁽¹⁹⁾
 - W. Mauritz (Linz, Austria): Haemorrhagic and traumatic shock ⁽²²⁾
 - V. Kretschmer, R. Karger, M. Weippert-Kretschmer (Marburg, Germany): Emergency and massive transfusion ⁽¹⁸⁾
 - E. Seifried (Frankfurt, Germany): Disseminated intra-vascular coagulation ⁽²⁹⁾
 - R.C. Peterlik, H.L. Haller, N. Hochmair, N. Ghazwinian (Linz, Austria): Burns: selected chapters of pathophysiology, monitoring and therapy. The part of the anaesthetist and intensive care medicine in the burn team
 - U. Rossi, S. Biagiotti, R. Chianese (Legnano, Milano, Italy): Rational basis of transfusion therapy
 - D. Grgičević (Zagreb, Croatia): General aspects of transfusion therapy
 - P. Lundsgaard-Hansen (Bern, Switzerland): The critical haematocrit
-

-
- Ch. Gabriel (Linz, Austria): Red cell substitution
 - K.F. Waschke, Th. Frietsch, C. Lenz (Mannheim, Germany): Oxygen-carrying blood substitutes
 - P. Höcker (Wien, Austria): Granulocyte transfusions
 - W. Kröll (Graz, Austria): Crystalloids and colloids in the critically ill patient
 - G. Lanzer (Graz, Austria): Platelet substitution
 - M. Köhler (Göttingen, Germany): Therapeutic use of fresh frozen plasma
 - P. Lundsgaard-Hansen (Bern, Switzerland): Treatment with albumin
 - A. Morell (Bern, Switzerland): Therapeutic use of immunoglobulins
 - V. Gašparović, M. Gjurašin, D. Ivanović (Zagreb, Croatia): Therapeutic plasmapheresis in intensive care patients ⁽¹¹⁾
 - J. Skodlar (Zagreb, Croatia): Transfusion therapy in intensive care patients
-

The results of the therapeutic plasmapheresis in intensive care patients were finally presented and discussed, concluding that "plasmapheresis is an important adjuvant procedure in the treatment of extremely severe clinical conditions, most of all hyper-viscosity syndrome, systemic vasculitis, and the conditions where the removal of circulating antibodies or toxins affects the clinical picture" ⁽¹¹⁾.

It was clear, throughout the whole course, that in no other field as in intensive care are two basic principles of Medicine so clearly evident: 1) that no good therapy could be given unless a proper diagnosis –or at least a clear diagnostic orientation– has been previously reached, and 2) that transfusion therapy is nothing but one of the many kinds of therapeutic interventions the patient may need.

Maybe nowhere else as in intensive care any decision on transfusion therapy, to be of advantage to the "critically ill", must be based on a sound cultural background of pathophysiology and clinical medicine ⁽²⁵⁾.

In this respect, intensive care seems to represent an ideal example of the "philosophy" of the ESTM, as expressed in the following series of "points of guidance", agreed upon in 1993 by its Scientific Committee ⁽²⁵⁾:

Points for guidance

on concepts and criteria to adhere to, when preparing a lesson for a didactic course of ESTM (European School of Transfusion Medicine)

- 1) Whenever possible, conceive the intervention of the Transfusion Medicine specialist as always clearly connected and interrelated with the one of other specialists in Clinical Medicine and in Laboratory Medicine.
 - 2) When dealing with the transfusional treatment in some sector of pathology or group of disorders, try and give a summarised account of the basic underlying biological and clinical phenomena, possibly in a sequential order:
 - 1) aetiology, biology, morphology, pathophysiology;
 - 2) nosology, disease classification, correlations;
 - 3) diagnostic methods and procedures, differential criteria;
 - 4) medical and surgical treatment in general; and only in the frame of the foregoing knowledge, at last:
 - 5) transfusional treatment, indications and contraindications, and assessment of its effect.
 - 3) When dealing with general issues of Transfusion Medicine technology and organisation, try and keep sharply separated the universally acquired concepts, that can be safely applied in daily practice, from the most recent subjects, still needing scientific approval and validation.
-

- 4) When faced with debatable problems, always give more than one solution, offering reasons in favour and against any of them, in the effort to develop an active critical judgement.
- 5) When analysing any issues of Transfusion Medicine, do attempt to synthesise as well, to avoid the false impression that conclusions could not be drawn or should be left to others.
- 6) When reasoning on any scientific or medical subject, always “leave the door open” for possible future alternative or different solutions, to enhance a positive appreciation of the continuous evolution of medical sciences and of Transfusion Medicine.

Therapeutic decisions in intensive care often need to be quick and sure, and the Transfusion Medicine specialist is currently involved in precise medical responsibilities, according to his recognized job definition: “The specialist in Transfusion Medicine is a medically qualified person, having thorough knowledge and sound experience of **clinical medicine** and **laboratory medicine**, having achieved a specific training in **general haematology**, **immunology** and **blood transfusion practice**, who is capable of ensuring maximum **efficacy** and **safety** -for the donor and the recipient- for any blood transfusion procedure, who is **responsible** for the **planning** and **organisation** of the collection, preparation, storage, distribution and optimal use of blood and blood products under a controlled scheme of **quality assurance**, who can assist and advise on any **diagnostic and therapeutic problem** of patients requiring transfusion, who is actively participating in **research** and **development**, who is able and willing to **teach Transfusion Medicine further** to doctors, medical students and any other collaborating professionals”.

In **Pescara** (Table V), 33 lectures were given by 22 teachers from 8 countries.

Table V - Transfusion Medicine in disasters and hospital emergencies ⁽³⁰⁾

Proceedings of the ESTM residential course, Pescara, Italy, 11th-14th June 1998
(Coordinators: M.J.G. Thomas, U. Rossi)

- F. Mercuriali (Milano, Italy): Blood Transfusion in the critically ill patient ⁽²³⁾
- J.R. Hess (Washington, USA): Blood storage: theory and practice
- K.A. Smith (Farnborough, Hampshire, Great Britain): Rapid pre-transfusion testing
- A.J. Baronne (Mahé, Seychelles): Quality assurance and quality control in emergencies
- A.J. Reppucci, J. Zietlow, R.J. Przybelski, H.J. Ehrlich (Nivelles, Belgium; Round Lake, IL, USA; Unterschleissheim, Germany):
Diaspirin crosslinked haemoglobin (DCLHb): development, status and perspectives
- D.R. Spahn (Zürich, Switzerland): Perfluorochemicals used as artificial oxygen carriers
- M. Desmond (Liverpool, Great Britain): Transfusion in surgical emergencies
- J.R. Hess (Washington, USA): Transfusion in trauma patients ⁽¹⁵⁾
- D.R. Spahn (Zürich, Switzerland): Crystalloids vs. colloids vs. gelatins
- J.R. Hess (Washington, USA): Fibrin glue and fibrin bandages
- O. Giachino, A.M. Biondi, M. Stella, A.L. Massaro, G. Magliacani (Torino, Italy):
Transfusion requirements in severely burned patients
- M. Desmond (Liverpool, Great Britain): Cell salvage in surgical emergencies
- M. Vittori (Roma, Italy): The role of transfusion in organ transplantation

-
- M.B. Donati (Santa Maria Imbaro, Chieti, Italy): The diagnosis and treatment of haemostatic emergencies
 - P. Accorsi, E. Pennese, F. Febo (Pescara, Italy): Thrombotic thrombocytopenic purpura and related syndromes
 - R. Marcenò, A. Indovina, R. Bavetta, V. Cappuzzo, C. Patti, M. Puma, A.M. Amodeo, T. Traina (Palermo, Italy):
The role of transfusion in sickle cell anaemia and other acute haemolytic anaemias
 - P. Carlier, G. Florio, R. Bruni, G. Lercari, M. Valbonesi (Genova, Italy):
Therapeutic apheresis in (clinical) emergencies
 - P. Di Bartolomeo, G. Di Girolamo, P. Bavaro, P. Oliosio, G. Papalinetti, S. Roccaforte (Pescara, Italy):
The diagnosis and transfusion requirements in primitive or secondary bone marrow failure, including bone marrow transplantation
 - E. Carapella De Luca, C. Bellan, P. Bellavita (Roma; Bergamo, Italy):
Transfusion Medicine in neonatal and paediatric emergencies
 - M.J.G. Thomas (Farnham, Surrey, Great Britain):
The serious hazards of transfusion: occurrence, diagnosis and treatment
 - M.J.G. Thomas (Farnham, Surrey, Great Britain): The history of Blood Transfusion in war
 - K.A. Smith (Farnborough, Hampshire, Great Britain): Field compatibility testing
 - M.J.G. Thomas (Farnham, Surrey, Great Britain): The emergency use of cryopreserved red cells
 - A.J. Baronne (Mahé, Seychelles): Transportation and storage of blood components in the field
 - H. Sandbladh (Genève, Switzerland):
Problems met in emergency field operations: a Red Cross perspective on Transfusion Service
 - V. Gašparovič, D. Ivanović, M. Gjurašin (Zagreb, Croatia):
Multiple organ failure as a late complication of injuries in war situation ⁽¹²⁾
 - M.J.G. Thomas (Farnham, Surrey, Great Britain): Emergency transfusion and the traveller
 - M.J.G. Thomas (Farnham, Surrey, Great Britain): Disaster planning in Transfusion Medicine
 - H. Sandbladh (Genève, Switzerland): The District Health Care norm
 - V. Ivanov (Minsk, Belarus): Blood transfusion in atomic disasters
 - I.F. Young (Genève, Switzerland): The Hospital / Transfusion Centre disaster plan ⁽³¹⁾
 - D. Castelli (Lugano, Switzerland):
The Swiss Red Cross Transfusion Service in the ambit of a Coordinate Sanitary Service ⁽⁹⁾
 - U. Rossi (Legnano, Milano, Italy; ESTM President):
Transfusion Medicine education as part of civilian service integrating or replacing compulsory military service ⁽²⁶⁾
-

The series of problems presented by blood transfusion in the critically ill patient was thoroughly reviewed, reaching the following conclusions ⁽²³⁾:

“Transfusion in critically ill patients may represent a difficult task for Blood Transfusion Services because no accepted guidelines are presently available. Some of them, especially those requiring massive transfusion, may deplete bank supply of RBCs, platelets and other blood components.

Usually the request of blood components is very urgent, so that all pre-transfusion testing and security measures are performed in emergency, bypassing some of the safety measures used in the standard procedures, exposing the patients to the most feared transfusion complication: the haemolytic transfusion reaction caused by the transfusion of ABO-incompatible RBCs, as a result of a clinical error in patient identification at the time of the collection of the blood sample, or when the unit is transfused to the improperly identified patients at the time of administration. Transfusion error is responsible of more than 50% of transfusion fatalities.

Most hospital systems, if adhered to, would theoretically prevent transfusion errors, however the opportunity of human error grows with the volume, complexity, urgency and emotional involvement, as it occurs in critically ill patients.

Since 3 years we adopted a failsafe device (Blood lock System) which defeats human error, because it provides a physical barrier that stops a transfusion when an error is about to occur, and ensures that the proper unit is transfused to the intended patient.

Moreover the patients are exposed to metabolic derangement due to the transfusion of blood that has undergone storage lesions; however the major changes observed in patients undergoing massive transfusions are generally different from theoretical expectations based on changes that occur during storage.

The most important measure should be to restore intravascular volume through the administration of crystalloids, under a constant control to avoid hypothermia; RBCs should be transfused to provide O₂-carrying capacity; in case of microvascular bleeding, normothermia should be achieved and eventually platelet concentrates can be administered in a normothermic/ normovolemic patient. In the majority of cases, the prophylactic infusion of FFP or PC and indiscriminate administration of calcium or bicarbonate are contraindicated.

In particular patients, some measures of blood conservation such as intra- and post-operative salvage can be utilized alone or in combination with rHuEPO in order to expand the circulating RBCs mass before surgery or to accelerate the correction of anaemia in the postoperative period."

Most of the contributions concerned biological, technical and organisational problems connected with war and disaster casualties (blood storage, rapid pre-transfusion testing, quality assurance and quality control, haemoglobin- and perfluorochemicals-based oxygen carriers, blood transfusion in war, field compatibility testing, cryopreserved red cells, transportation and storage in the field, emergency field operations, emergency transfusion for the traveller, disaster planning, Red Cross organisation, blood transfusion in atomic disasters) and with hospital clinical emergencies (trauma patients, crystalloids vs. colloids vs. gelatins, fibrin glue, severely burned patients, transfusion and cell salvage in surgical emergencies, organ transplantation, haemostatic emergencies, thrombotic thrombocytopenic purpura (TTP), sickle-cell anaemia and other acute haemolytic anaemias, therapeutic apheresis in clinical emergencies, bone marrow failure and bone marrow transplantation, neonatal and paediatric emergencies, diagnosis and treatment of serious hazards of transfusion).

A useful description was made of the Advanced Trauma Life Support (ATLS) guidelines of the American College of Surgeons ⁽¹⁵⁾.

Of particular interest was the report on multiple organ failure as a late complication of injuries in war situation, based on the Croatian experience on 122 patients, reaching the following conclusion ⁽¹²⁾:

"Multiple organ failure is most frequently a late complication of war injury, particularly as a consequence of sepsis. The course of the disease differs in surgical and medical intensive care units. Surgical intensive care units mainly deal with patients with multiple shot wounds and multiple organ failure as a consequence of sepsis, resistant bacterial strains or mycotic infections, and the prognosis is grave. Medical intensive care units frequently deal with inflammatory viral complications, often transmitted by rodents, but the prognosis of these

conditions, even in the case of multiple organ failure, is more favourable than in the surgical intensive care units. Consequently, in war situation, multiple organ failure is more common in surgical intensive care units, but it is also observed in medical intensive care units due to a greater frequency of infectious diseases, which in these conditions also result in extremely high death rate”.

Special emphasis was given to the absolute need of a Hospital-Transfusion Centre disaster plan ⁽³¹⁾, to meet the demand both from internal and external disasters.

Examples of strict coordination between military and civilian organisations were given, both in the planning of a common efficient answer in case of disaster or war ⁽⁹⁾ and in the education to Transfusion Medicine and voluntary blood donation during military and civilian services ⁽²⁶⁾.

In Prague (Table VI), 27 lectures were given by 16 teachers from 6 countries: 12 lectures concerned various problems of therapeutic haemapheresis, while 15 lectures dealt with general problems of physiopathology, diagnosis, clinical presentation and treatment of haemostatic disorders.

Table VI - Therapeutic haemapheresis -
- Diagnosis and transfusion treatment of emergencies in haemostatic disorders
Proceedings of the ESTM residential course, Prague, Czechia, 12th-15th
November 1998
(Coordinators: P. Höcker, L. Walterová)

-
- P. Höcker (Wien, Austria): Multicomponent collection
 - Z. Gašová (Prague, Czechia): Technical procedures of therapeutic haemapheresis
 - P. Höcker (Wien, Austria): Stem cell apheresis: how to process stem cells
 - E. Fehérvízová (Bratislava, Slovakia): Cell depletion
 - W. Nussbaumer (Innsbruck, Austria): Plasma treatment
 - Z. Gašová (Prague, Czechia): Photopheresis
 - E. Fehérvízová (Bratislava, Slovakia): Granulocyte harvest
 - P. Höcker (Wien, Austria): Granulocyte apheresis and transfusion
 - W. Nussbaumer (Innsbruck, Austria): Platelet apheresis
 - M. Blaha (Hradec Králové, Czechia): LDL-apheresis
 - L. Walterová (Prague, Czechia): Platelet preparation by non-apheretic methods
 - P. Turek (Prague, Czechia): Platelet support
 - P. Cieslar (Prague, Czechia): Overview of primary haemostasis
 - Z. Vorlová (Prague, Czechia): Overview of normal coagulation
 - P. Cieslar (Prague, Czechia): Hereditary and acquired platelet disorders
 - M. Matýšková, J. Zvarellová (Brno, Czechia): Technical aspects and quality control of coagulation tests
 - S. Zupančić-Šalek (Zagreb, Croatia): Hereditary coagulation disorders
 - M. Matýšková, A. Buliková (Brno, Czechia): Thrombophilic states
 - V. Kretschmer (Marburg, Germany): Perioperative haemostaseological diagnostics and treatment
 - E. Seifried (Frankfurt, Germany): Pathogenesis, diagnosis and treatment of DIC
 - V. Kretschmer, R. Karger, M. Weippert-Kretschmer (Marburg, Germany): Emergency and massive transfusion
 - Z. Vorlová (Prague, Czechia): Haemostatic emergencies in haematological malignancies ⁽³²⁾
-

-
- J. Charvát (Prague, Czechia): Haemostatic emergencies in liver disease and liver transplantation ⁽¹⁰⁾
 - W. Muntean (Graz, Austria): Haemostatic emergencies in newborns and small children ⁽²⁴⁾
 - P. Turek (Prague, Czechia): Therapeutic use of plasma fractions
 - V. Kretschmer (Marburg, Germany): Perioperative use of FFP and monitoring of its effects
 - U. Rossi (Legnano, Milano, Italy):
Diagnosis and treatment of haemostatic emergencies: what to do first? what to do next? ⁽²⁷⁾
-

Surveys on haemostatic emergencies in haematological malignancies ⁽³²⁾ in liver disease and liver transplantation ⁽¹⁰⁾, and in newborns and small children ⁽²⁴⁾ allowed a better understanding of the therapeutic use of plasma fractions and fresh-frozen plasma (FFP).

The problems of “what to do first? what to do next?” in the diagnosis and treatment of haemostatic emergencies was discussed ⁽²⁷⁾, allowing to reach the following conclusion:

*“If it is clear enough that a good answer to both questions “what to do **first**” and “what to do **next**”, in a well organised and competent clinical and laboratory setting, can save many lives thanks to the active support of a competent Transfusion Service, it is unfortunately not equally clear, in the general -and also in the medical!- public, that some more lives could be saved by a proper answer to the question “what should have been done **before**”: before the onset of the haemorrhagic or thrombotic event and of clinical symptoms.*

Systematic screening for some hereditary coagulation defects and thrombophilic states has now been made possible; liver cirrhosis, with hepatic insufficiency due to alcoholism, is still the most common disease all over Europe; dietary and medical prevention of many widespread diseases, underlying haemorrhagic and thrombotic events, is very easy but little practised; ignorance, and not only bad luck, is still damaging and killing.”

But this should be a subject for another lecture, or may be for an other course, and for meditating on a good answer to the question “what to do next” in the planning of future medical activities in Europe, to prevent that so many patients should unnecessarily reach the stage of “critically ill”, needing intensive care.

References

- 1) Barbara J.A.J.: Risk reduction: how to reconcile it with epidemiology. In: Brubnjak-Jevtič V., Rossi U. (editors): "Blood therapy in surgery. Safety assurance in blood therapy". Proceedings Slovenian/ESTM residential course (3rd postgraduate course), Portorož (Slovenia), 14-16/12/2000; pp. 9-14. ESTM, Ljubljana, 2000. ESTM, Ljubljana, 2000.
- 2) Barbara J.A.J.: Transfusion risk and its perception in a wider context. In: Brubnjak-Jevtič V., Rossi U. (editors): "Blood therapy in surgery. Safety assurance in blood therapy". Proceedings Slovenian/ESTM residential course (3rd postgraduate course), Portorož (Slovenia), 14-16/12/2000; pp. 9-14. ESTM, Ljubljana, 2000; pp. 43-48. ESTM, Ljubljana, 2000.
- 3) Barbara J.A.J., Blagoevska M., Haračić M., Rossi U. (editors): The future of blood safety, a challenge for the whole Europe. How can international regulations be implemented all over. Proceedings ESTM residential course, Sarajevo (Bosnia-Herzegovina), 25-28/10/2001. ESTM, Milano, 2001.
- 4) Barbara J.A.J., Leikola J., Rossi U. (editors): Risk perception and risk assessment in Transfusion Medicine: how to achieve a sound transfusion practice based on scientific truth. Proceedings ESTM residential course, Brussels (Belgium), 26-29/2/2000. ESTM, Milano, 2000.
- 5) Blauhut B., Skodlar J. (editors): Transfusion Medicine and intensive care. Proceedings ESTM residential course, Linz (Austria), 7-9/11/1997. ESTM, Milano, 1997.
- 6) Brock H.: Patient population of the intensive care units. In: Blauhut B., Skodlar J. (editors): Transfusion Medicine and intensive care. Proceedings ESTM residential course, Linz (Austria), 6-9/11/1997; pp. 3-5. ESTM, Milano, 1997.
- 7) Brubnjak-Jevtič V., Rossi U. (editors): "Blood therapy in surgery. Autotransfusion". Proceedings Slovenian/ESTM residential course (2nd postgraduate course), Portorož (Slovenia), 9-11/12/1999. ESTM, Ljubljana, 1999.
- 8) Brubnjak-Jevtič V., Rossi U. (editors): "Blood therapy in surgery. Safety assurance in blood therapy". Proceedings Slovenian/ESTM residential course (3rd postgraduate course), Portorož (Slovenia), 14-16/12/2000. ESTM, Ljubljana, 2000.
- 9) Castelli D.: The Swiss Red Cross Transfusion Service in the ambit of a Coordinate Sanitary Service. In: Thomas M.J.G., Rossi U. (editors): Transfusion Medicine in disasters and hospital emergencies. Proceedings ESTM residential course, Pescara (Italy), 11-14/6/1998; pp. 229-230. ESTM, Milano, 1998.
- 10) Charvát J.: Haemostatic emergencies in liver diseases and liver transplantation. In: Höcker P., Walterová L. (editors): Therapeutic haemapheresis - Diagnosis and transfusion treatment of emergencies in haemostatic disorders. Proceedings ESTM residential course, Prague (Czechia), 12-15/11/1998; pp. 141-145. ESTM, Milano, 1998.
- 11) Gašparovič V., Gjurašin M., Ivanović D.: Therapeutic plasmapheresis in intensive care patients. In: Blauhut B., Skodlar J. (editors): Transfusion Medicine and intensive care. Proceedings ESTM residential course, Linz (Austria), 6-9/11/1997; pp. 195-200. ESTM, Milano, 1997.
- 12) Gašparovič V., Ivanović D., Gjurašin M.: Multiple organ failure as a late complications of injuries in war situation. In: Thomas M.J.G., Rossi U. (editors): Transfusion Medicine in disasters and hospital emergencies. Proceedings ESTM residential course, Pescara (Italy), 11-14/6/1998; pp. 193-198. ESTM, Milano, 1998.
- 13) Grgičević D.: Quality control and quality management of blood safety. In: Brubnjak-Jevtič V., Rossi U. (editors): "Blood therapy in surgery. Safety assurance in blood therapy". Proceedings Slovenian/ESTM residential course (3rd postgraduate course), Portorož (Slovenia), 14-16/12/2000; pp. 49-52. ESTM, Ljubljana, 2000.
- 14) Hafner V.: Blood safety in European countries with limited resources. In: Brubnjak-Jevtič V., Rossi U. (editors): "Blood therapy in surgery. Safety assurance in blood therapy". Proceedings Slovenian/ESTM residential course (3rd postgraduate course), Portorož (Slovenia), 14-16/12/2000; pp. 41-42. ESTM, Ljubljana, 2000.
- 15) Hess J.R.: Transfusion in trauma patients. In: Thomas M.J.G., Rossi U. (editors): Transfusion Medicine in disasters and hospital emergencies. Proceedings ESTM residential course, Pescara (Italy), 11-14/6/1998; pp. 61-65. ESTM, Milano, 1998.
- 16) Höcker P., Walterová L. (editors): Therapeutic haemapheresis - Diagnosis and treatment of emergencies in haemostatic disorders. Proceedings ESTM residential course, Prague (Czechia), 12-15/11/1998. ESTM, Milano, 1998.
- 17) James V.: Barbara J.: Blood safety: the cost/benefit debate. In: Luzzatto L., Brand A., Rossi U. (editors): Laboratory Haematology and Transfusion Medicine in the year 2000: reality and prospects. Proceedings ESTM residential course, Castellanza (Italy), 22-25/6/2000; pp. 273-281. ESTM, Milano, 2000.

- 18) Kretschmer V., Karger R., Weippert-Kretschmer M.: Emergency and massive transfusion. In: Höcker P, Walterová L. (editors): Therapeutic haemapheresis - Diagnosis and transfusion treatment of emergencies in haemostatic disorders. Proceedings ESTM residential course, Prague (Czechia), 12-15/11/1998; pp. 127-138. ESTM, Milano, 1998.
- 19) Labar B.: Clinical definition of intensive care patients in haematology. In: Blauhut B., Skodlar J. (editors): Transfusion Medicine and intensive care. Proceedings ESTM residential course, Linz (Austria), 6-9/11/1997; pp. 67-71. ESTM, Milano, 1997.
- 20) Luzzatto L., Brand A., Rossi U. (editors): Laboratory Haematology and Transfusion Medicine in the year 2000: reality and prospects. Proceedings ESTM residential course, Castellanza (Italy), 22-25/6/2000. ESTM, Milano, 2000.
- 21) Lukič L., Kremžar B., Brubnjak-Jevtič V., Rossi U. (editors): Blood therapy in surgery. Transfusion Medicine and intensive care in surgery. Proceedings Slovenian/ESTM residential course (4th postgraduate course), Portorož (Slovenia), 13-15/12/2001. ESTM, Ljubljana, 2001.
- 22) Mauritz W.: Haemorrhagic and traumatic shock. In: Blauhut B., Skodlar J. (editors): Transfusion Medicine and intensive care. Proceedings ESTM residential course, Linz (Austria), 6-9/11/1997; pp. 73-81. ESTM, Milano, 1997.
- 23) Mercuriali F.: Blood Transfusion in the critically ill patient. In: Thomas M.J.G., Rossi U. (editors): Transfusion Medicine in disasters and hospital emergencies. Proceedings ESTM residential course, Pescara (Italy), 11-14/6/1998; pp. 1-9. ESTM, Milano, 1998.
- 24) Muntean W.: Haemostatic emergencies in newborns and small children. In: Höcker P, Walterová L. (editors): Therapeutic haemapheresis - Diagnosis and transfusion treatment of emergencies in haemostatic disorders. Proceedings ESTM residential course, Prague (Czechia), 12-15/11/1998; pp. 147-152. ESTM, Milano, 1998.
- 25) Rossi U.: Introduction to "Transfusion Medicine and intensive care". In: Blauhut B., Skodlar J. (editors): Transfusion Medicine and intensive care. Proceedings ESTM residential course, Linz (Austria), 6-9/11/1997; pp. 1-2. ESTM, Milano, 1997.
- 26) Rossi U.: Transfusion Medicine education as part of civilian service integrating or replacing compulsory military service. In: Thomas M.J.G., Rossi U. (editors): Transfusion Medicine in disasters and hospital emergencies. Proceedings ESTM residential course, Pescara (Italy), 11-14/6/1998; pp. 231-236. ESTM, Milano, 1998.
- 27) Rossi U.: Diagnosis and treatment of haemostatic emergencies: what to do first? what to do next? In: Höcker P, Walterová L. (editors): Therapeutic haemapheresis - Diagnosis and transfusion treatment of emergencies in haemostatic disorders. Proceedings ESTM residential course, Prague (Czechia), 12-15/11/1998; pp. 165-183. ESTM, Milano, 1998.
- 28) Rossi U.: The urgent need of mutual compatible criteria and behaviour for blood safety in Europe. In: Brubnjak-Jevtič V., Rossi U. (editors): "Blood therapy in surgery. Safety assurance in blood therapy". Proceedings Slovenian/ESTM residential course (3rd postgraduate course), Portorož (Slovenia), 14-16/12/2000; pp. 15-40. ESTM, Ljubljana, 2000.
- 29) Seifried E.: Disseminated intra-vascular coagulation. In: Blauhut B., Skodlar J. (editors): Transfusion Medicine and intensive care. Proceedings ESTM residential course, Linz (Austria), 6-9/11/1997; pp. 95-108. ESTM, Milano, 1997.
- 30) Thomas M.J.G., Rossi U. (editors): Transfusion Medicine in disasters and hospital emergencies. Proceedings ESTM residential course, Pescara (Italy), 11-14/6/1998. ESTM, Milano, 1998.
- 31) Young I.F.: The Hospital/Transfusion Centre disaster plan. In: Thomas M.J.G., Rossi U. (editors): Transfusion Medicine in disasters and hospital emergencies. Proceedings ESTM residential course, Pescara (Italy), 11-14/6/1998; pp. 219-227. ESTM, Milano, 1998.
- 32) Vorlová Z.: Haemostatic emergencies in haematological malignancies. In: Höcker P, Walterová L. (editors): Therapeutic haemapheresis - Diagnosis and transfusion treatment of emergencies in haemostatic disorders. Proceedings ESTM residential course, Prague (Czechia), 12-15/11/1998; pp. 139-140. ESTM, Milano, 1998.